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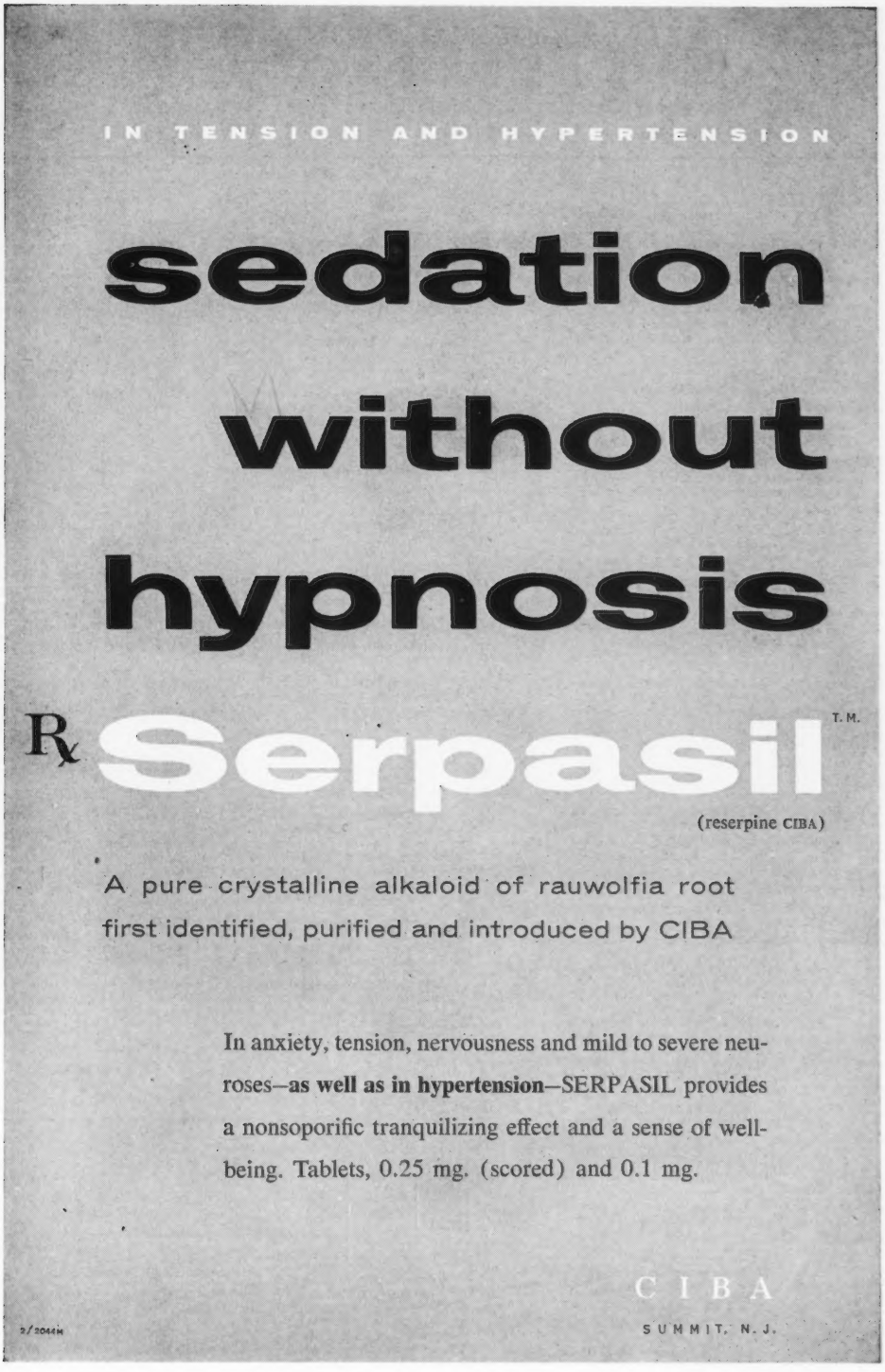
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450 SUTTER, SAN FRANCISCO 8, CALIFORNIA • TELEPHONE DOUGLAS 2-0062
Address editorial communications to Dwight L. Wilbur, M.D., and business communications to John Hunton

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"Entered as second-class matter at the post office at San Francisco, under the Act of March 3, 1879." Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized August 10, 1918.

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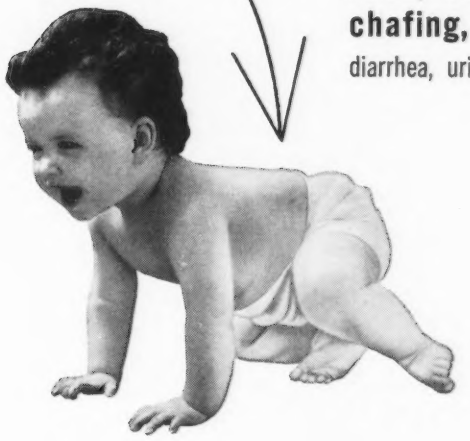

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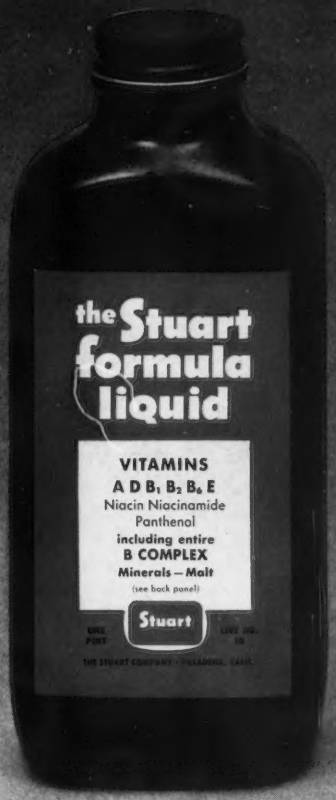

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Tonsillectomy Affects Severity of Polio

A polio victim who has had his tonsils removed is about four times more likely to have the serious bulbar type of polio than a patient who still has tonsils.

This finding, reported in a recent issue of the *Journal of the American Medical Association*, was made after a study of more than 2,000 victims of a 1946 polio outbreak in Minnesota.

Gaylord W. Anderson, M.D., and Jeanne L. Rondeau, A.B., of the University of Minnesota School of Public Health, said their study did not show that persons without tonsils are more likely to get polio. However, if "recognizable" polio does occur, the patient without tonsils is in more danger of having the bulbar type. Aside from the first month after operation, when bulbar incidence is lower than in later months, it makes no difference how long before the polio attack the tonsillectomy was performed, they said.

Bulbar involvement occurs in over a third of the patients whose tonsils are not present at the time of the polio attack. Less than a tenth of the patients who have not had tonsillectomy show the bulbar type, which affects the gray matter in part of the brain, resulting in impairment of breathing and often requiring use of the iron lung.

There is much evidence that polio virus is so widespread that almost everyone is exposed to it, the *Journal* article said. But only a small number respond badly to the virus, with resultant paralysis.

The proportion of persons who respond with the bulbar type supposedly has increased in recent years and is greater in the older age groups. The article said the probable reason is that higher polio incidence has shifted into the age more likely already to have had tonsillectomies, and that the frequency of tonsillectomies has increased.

The lack of cases of bulbar type polio in certain areas may be due to the concentration of polio in ages before tonsil removal, they said. Certain countries, such as Egypt, Chile, and Japan, have almost no bulbar polio, probably because of the almost complete absence of tonsillectomies at ages when polio is likely to strike.

The Minnesota study, aided by a grant from the National Foundation for Infantile Paralysis, was based on 2,669 case histories. It showed that 71.4 per cent of the 535 persons with bulbar polio had undergone tonsillectomies as contrasted with 28.2 per cent of the 936 with severe spinal polio; 32.6 per cent of the 908 with mild spinal, and 34.8 per cent of the 290 nonparalytic cases.

"Even more significant than the absolute difference between the bulbar and other groups is the fact that this difference holds at all ages and in both sexes," they said.

If "recognizable" polio developed in a child who still had tonsils, the chances were one out of 12 that

(Continued on Page 16)

A potent weapon against
the most common form of "juvenile delinquency" . . .

the meal-time behavior problem, the child who shreds his mother's patience and deprives himself of inches and pounds because he "just won't eat" . . .

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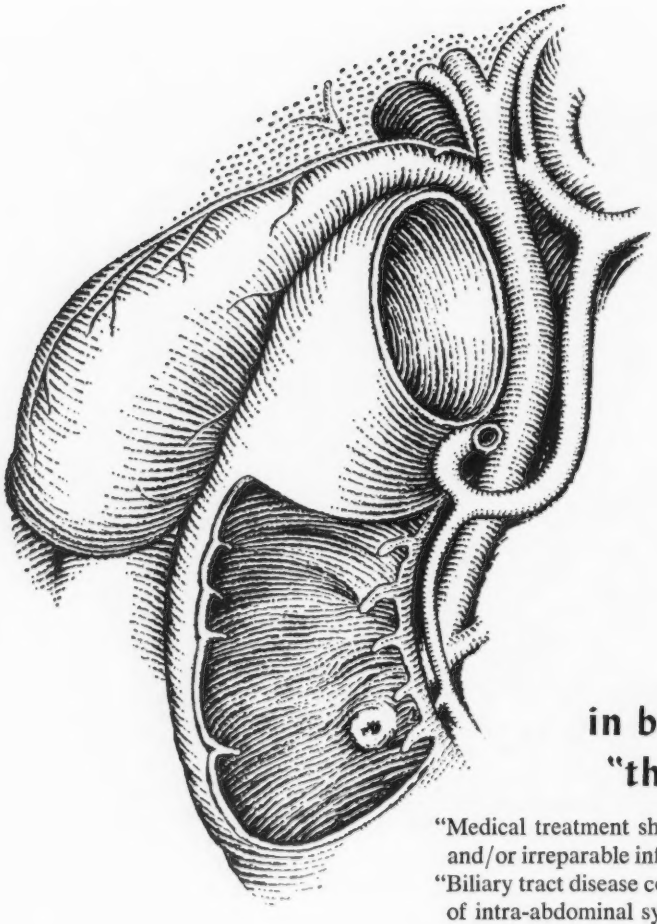

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1. Segal, H.: Postgrad. Med. *13*:81, 1953. 2. O'Brien, G. F., and Schweitzer, I. L.: M. Clin. North America *37*:155, 1953. 3. Beckman, H.: Pharmacology in Clinical Practice, Philadelphia, W. B. Saunders Company, 1952, p. 361.

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***Bibliography of 192 references available on request.**

1. Coles, B.L., and James, U.: The Effect of Cobalt and Iron Salts on the Anaemia of Prematurity, Arch. Disease in Childhood *29*:85 (1954).
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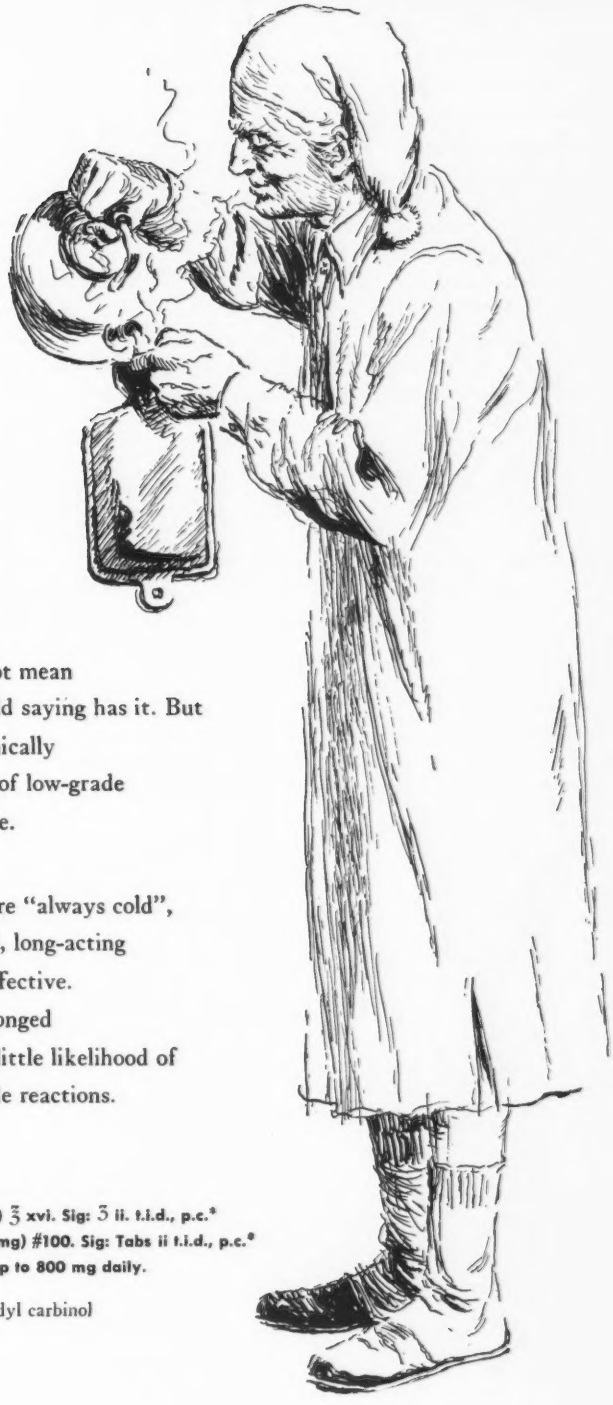

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Tonsillectomy Affects Severity of Polio

(Continued from Page 10)

the infection would be bulbar, but, if the child had at some time had his tonsils removed, the chances were more than one in three, they said.

"The magnitude of this effect is quite apparent" when the actual number of bulbar cases is compared with the number that might have been expected if none of the patients had had tonsillectomies, they said. Among the 694 patients who had not had tonsillectomies before the age of 4, only 59 bulbar cases developed, or 8.5 per cent.

"If the 81 patients who had had tonsillectomy, in this age group, had had the same rate of bulbar involvement, there would have been only 6.9 bulbar cases," they said. "Actually there were 21, or an excess of 14.1 cases attributable to the higher bulbar rate in those who had had tonsillectomy.

"It is found that there were 273 more bulbar cases in the entire group than might have been expected if all had had the same rate of bulbar involvement as did the group of patients who had not had tonsillectomy."

They said it is probable that tonsillectomy removes some "natural barrier" which would have prevented the spread of polio virus from the throat to the nerve centers. However, their study did not answer the question of how bulbar polio develops, or whether a person without tonsils is more likely to get any kind of polio.

"Evidence is available to indicate that several factors such as recent tonsillectomy, pregnancy, excessive fatigue, and recent injections" of certain kinds may "tip the scales" toward susceptibility, they said.

"No inference is to be drawn as to the desirability of tonsil removal," they said, but only "a suggestion of the importance of suitable indication for removal before operation is undertaken."

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Calcium Lactate USP	2.25 Gm.
Ferrous Sulfate USP *(Iron content 60 mg.)*	300.0 mg.
Vitamin C	100.0 mg.
Vitamin B_6	10.0 mg.
Vitamin B_{12}	10.0 mcg.
Vitamin B_1	4.0 mg.
Vitamin B_2	2.5 mg.
Niacinamide	60.0 mg.
Folic Acid	0.3 mg.
Calcium Pantothenate	5.0 mg.
Vitamin K	1.5 mg.
Vitamin A *(acetate)*	6,000 USP units
Vitamin D	600 USP units
Iodine	0.15 mg.
Copper	1.0 mg.
Magnesium	15.0 mg.
Cobalt	0.15 mg.
Manganese	4.5 mg.
Molybdenum	0.15 mg.
Nickel	0.15 mg.
Zinc	2.25 mg.

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A (acetate)	25,000 USP Units
D	1,500 USP Units
C	150.0 mg.
B_1	10.0 mg.
B_2	5.0 mg.
Niacinamide	100.0 mg.
Calcium Pantothenate	5.0 mg.
B_6	0.5 mg.
B_{12}	5.0 mcg.
Folic Acid	0.1 mg.
Mixed Tocopherols	5.0 mg.
K	2.0 mg.
MINERALS	
Ferrous Sulfate Dried	130.0 mg.
Dicalcium Phosphate Anhydraus	250.0 mg.
Iodine	0.15 mg.
Copper	1.0 mg.
Cobalt	0.15 mg.
Manganese	3.0 mg.
Magnesium	10.0 mg.
Potassium	5.0 mg.
Molybdenum	0.2 mg.
Zinc	1.5 mg.
Nickel	0.1 mg.

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- ✻Complete per diem nutritional supplement
- ✻Convenient capsule-shaped tablet for greater tolerance and assimilation
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Each capsule-shaped tablet contains:

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A (acetate)	8,334 USP Units
D	400 USP Units
E	1 Int.Unit
C	50.0 mg.
B_1	3.3 mg.
B_2	2.0 mg.
Niacinamide	50.0 mg.
B_6	0.2 mg.
B_{12}	1.67 mcg.
Folic Acid	0.17 mg.
MINERALS	
Calcium	225.0 mg.
Phosphorus	176.0 mg.
Iron (Ferrous Gluconate)	15.0 mg.
Iodine	0.1 mg.
Manganese	3.0 mg.
Copper	0.67 mg.
Zinc	1.5 mg.
Cobalt	0.1 mg.
Molybdenum	0.1 mg.
Magnesium	10.0 mg.
Nickel	0.1 mg.

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American Prisoners of War May Still Have Odd Disease

Approximately 2,000 Americans are believed to have been affected by a snail-carried disease during World War II and were never treated.

Two Coral Gables, Fla., physicians reported in a recent issue of the *Journal of the American Medical Association* on one case discovered in a former Japanese prisoner-of-war. They said the discovery of the disease after 10 years stresses "the importance of looking for the disease in similar persons."

Schistosomiasis, also known as katayama disease, is not native to the United States and presents no public health problem here. However, about 1,500 cases were diagnosed and treated during the Leyte campaign and thousands more may have occurred without being found. It was prevalent among prisoners-of-war in the Philippines.

The disease results in thickening of the intestinal wall, cirrhosis of the liver with its complications, and urinary bladder disease.

The disease attacks man through free-swimming larvae developed in snails. The larvae burrow into the skin, usually during swimming or bathing.

The former prisoner-of-war treated by Drs. John L. Wolford and John M. Rumball had been interned at Mindanao for two years, during which time he labored in rice paddies from sunup to sundown. These areas are known to be infested with schistosoma larvae.

The physicians pointed out that symptoms of the disease may go unnoticed and it is difficult to diagnose. They said it should be considered in any person who has been in the infested area and who has vague complaints or an enlarged liver, since early treatment can prevent further damage.

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- **for dramatic clinical response in primary and secondary anemias**

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Iron Choline Citrate† (Ferrolip)	200 mg.
Vitamin B_{12} Crystalline, U.S.P.	10 mcg.
Folic Acid	0.5 mg.
Ascorbic Acid	50 mg.
Thiamine HCl	2 mg.
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Desiccated Duodenum*	100 mg.
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Summary of Case Histories-Series A*

Age—Sex	BP—mm. Hg. BEFORE	BP—mm. Hg. AFTER
64—M	190/115	140/90
37—M	200/130	130/85
48—M	230/140	140/100
46—M	220/140	160/110
41—M	210/140	155/110
43—M	200/120	160/110
26—M	230/130	180/120
44—M	220/130	175/120
46—M	220/120	162/90

(Write for complete clinical data, including case histories.)

*Personal communication to Irwin, Neisler & Company.

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The sole therapeutic agent in Unitensen Tablets is cryptenamine—a potent blood pressure lowering alkaloid fraction isolated by the research staff of Irwin, Neisler & Company. In the majority of cases (see chart at left), cryptenamine will lower blood pressure decisively, and will control blood pressure at the lower levels for prolonged periods of time.

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Unitensen Tablets exert a central action on the blood pressure lowering mechanism. Circulatory equilibrium is not disrupted. Improved circulation and improved work of the heart are often attained, *along with the decisive fall in blood pressure.*

Unitensen Tablets have no sympatholytic or parasympatholytic action. Ganglionic blocking does not occur. Unitensen Tablets *do not* cause postural hypotension and collapse, an ever-present risk with other potent blood pressure lowering drugs. Renal function is *not* impaired.

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Unitensen is biologically standardized twice, first for hypotensive response and, second, for side effects (emesis) in the dog so that a safe therapeutic range between the two is assured. In extensive clinical trials only a few isolated cases exhibited occasional vomiting.

Unitensen Tablets do not cause the serious side effects common to widely used synthetic hypotensives. Unitensen Tablets can be given over long periods of time with entire dependability. Cumulative effects have not been noted.

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Start with 2 tablets daily, given immediately after breakfast and at bedtime. If more tablets are needed, include an afternoon dose at 1 or 2 p.m.

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Because of lower dosage, Unitensen Tablets save your patients ⅓ to ½ over the cost of other potent blood pressure lowering agents.

Each Unitensen Tablet contains: Cryptenamine*.....2 mg.†
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*Ester alkaloids of Veratrum viride obtained by an exclusive Irwin-Neisler nonaqueous extraction process.
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Homeless Men Probably Spread Much TB

The homeless men of "Skid Row" quite probably are a major source for the spread of tuberculosis in the United States, a Minneapolis survey shows.

An 11-month study of the client population of the Minneapolis Salvation Army Men's Social Service Center showed the rate of new cases of tuberculosis was 55 times as great as the rate in the city's general population during the same period.

The survey was reported in a recent issue of the *Journal of the American Medical Association* by Dr. Herbert W. Jones, Jr., medical director of the service center; Jean Roberts, Minneapolis director of public health records and statistics, and John Brantner, clinical director of the Center.

Most of the men studied came to the Center voluntarily from Skid Row. About 70 per cent of them said "the abusive use of alcohol" was their major problem. Only 30 per cent were residents of Minneapolis, and 20 per cent residents of Minnesota. Fifty per cent had no established residence in any state.

The high rate of tuberculosis occurred in a highly mobile group living under conditions likely to foster infection of others in the same group, the writers said.

"The men in this group generally sleep in dormi-

(Continued on Page 32)


NOW *in urinary tract infections therapy is facilitated by prescribing the new convenient dosage form*
Mandelamine®
(BRAND OF METHENAMINE MANDELATE)
"HAFGRAMS" 0.5 Gm. (7½ Gr.) each
to provide
...continued therapeutic drug levels of Mandelamine
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with this new dosage schedule:
adults | morning 2 | noon 2 | evening 2 | 0.5 Gm.
children over five | morning 1 | noon 1 | evening 1 | 0.25 Gm.
infants under one | morning 1 | | evening 1 | 0.25 Gm.
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Body Armor Recommended For Civilian Use

The eight-pound nylon body armor first tested in Korea should be considered for civilian use, Army officers recently declared.

Field trials showed the armor was most effective in protecting against chest and abdominal wounds, particularly when the bullet or shell fragment hit at an angle or was of low velocity, they said. Thus it would be effective during an attack on cities, when injuries from flying debris are frequent.

"The battlefield is no longer confined, and the specter of atom-bomb or H-bomb blasts on homeland cities is an accepted prospect," they said. "Injury from flying debris, such as masonry, metal, glass, etc., is of great importance after such a blast, and conceivably the use of body armor could lessen appreciably the staggering morbidity and mortality anticipated in such a mass civilian disaster."

The medical effectiveness of the body armor was described in a recent issue of the *Journal of the American Medical Association* by Lt. Col. R. H. Holmes, Maj. W. F. Enos, Jr., and Capt. J. C. Beyer, of the Armed Forces Institute of Pathology, Washington.

Major findings in research leading to development of the vest were that 75 per cent of all wounds are caused by shell fragments, that about 30 per cent of all wounds were in the chest or abdomen, and that most missiles were of low enough velocity to be protected against.

Actual field trial in Korea showed that a lightweight vest could be worn without interfering with combat, that soldiers "unanimously" desired it, and that it boosted morale and increased "aggressiveness."

Tests in 1951 and 1952 showed the armor brought about a relative increase in the percentage of head and neck wounds and severe wounds of extremities. This was because soldiers suffering multiple wounds, one or more of which would have been fatal in the chest or abdomen, were protected enough to allow them to reach hospitals despite severe wounds. Otherwise these men would not have been likely to survive. Combat surgeons also noted that the severity of abdominal wounds had decreased.

"This increase in survival time actually leads to an additional reduction in the number of men killed in action, because of advanced techniques in battlefield recovery and helicopter evacuation," they said. Once at a hospital, modern care gives the man a 98 per cent chance of survival.

The armor provided "a high degree of protection against shell fragments and some degree of protection against small arms fire, depending on the angle of incidence of the bullet and the range," they said. "Bullets hitting at acute angles and/or reduced velocities occurring at the terminus of flight are frequently defeated by the vests. In other instances, the severity of wounds is significantly reduced, even though the vest is perforated.

"Classification forbids detailed discussion, but it can be stated that in a statistically significant number of instances 68 per cent of all missile hits on armored vests worn in actual combat were defeated. Because of the probability of multiple wounds, this does not necessarily mean that a casualty or fatality was prevented, but it does mean that there was an absolute reduction in the number of wounds, any of which conceivably could have been fatal or disabling. Since about one-third of all who sustain thoracic and abdominal wounds are wounded in these anatomic regions alone, it follows that there is also an actual reduction in total casualty incidence."

Hemiplegic Amputee Can Learn To Walk

A child with both legs amputated and one side of his body paralyzed learned to walk and even climb stairs, four New York City doctors recently stated.

The child's illness, coupled with many complications, was so acute that he suffered loss of speech and could barely move one hand. Despite these complications, after three years of treatment he "could walk unsupported with a fair gait and was almost independent in activities of daily living."

This case and the rehabilitation of two other hemiplegic amputees was described in a recent issue of the *Journal of the American Medical Association* by Drs. Abraham O. Posniak, Charles Long, Michael M. Dacso, and Howard A. Rusk.

They said although the amputee who also suffers paralysis is doubly handicapped, walking with an artificial leg is possible if the patient has a strong enough desire plus the cooperation and love of his family. In fact, in certain cases it is "mandatory."

They said they found only one other report of successful rehabilitation of the hemiplegic amputee, but there are probably other isolated incidents, particularly among wounded servicemen.

Walking with an artificial leg is easier if the amputation occurs before paralysis, they said. It is also less difficult if the amputation is opposite the paralysis. The patient with this kind of disability cannot be expected to walk on the paralyzed leg alone, so an artificial leg is "mandatory" to give the needed balance. If the muscles on the amputated side are paralyzed, walking is more difficult, but "not impossible."

"Among the general factors common to all rehabilitation, the most important is motivation," they said. "Also relevant to the outcome of therapy is the family constellation in which the individual is set: cooperation, love and understanding by the family are essential to rehabilitation."

They said a 58-year-old man suffered right side paralysis and amputation but learned to walk in 18 months. A 66-year-old man with right side paralysis and left amputation walked with a single cane and could climb stairs with a hand rail.

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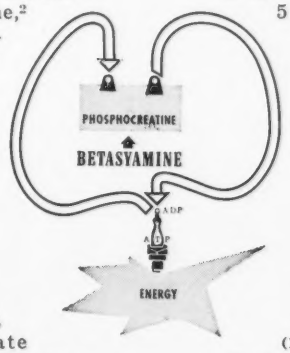
BETASYAMINE marks a significant advance in Hi-Energy Compound Replacement Therapy for the supportive management of such debilitating conditions as **Anxiety Tension Fatigue Syndromes, Poliomyelitis, Multiple Sclerosis, Cardiovascular Disease, Muscular Dystrophy** and other **low energy states.** As a balanced combination of immediate precursors of creatine,[1] Betasyamine accelerates formation and utilization of phosphocreatine,[2] storehouse of high physiologic energy.[3] Because phosphocreatine levels have been found to be low in many debilitating diseases,[4] replacement therapy with Betasyamine has been demonstrated clinically effective, both by objective and subjective improvement in a significant number of cases. In such patients, the ingestion of adequate amounts of Betasyamine for a minimum of three weeks has usually been followed by **freedom from fatigue, a marked sense of well-being, greater energy output, improved articulation and ambulation, relief from anginal pain and dyspnea, more rapid progress during physiotherapy and during psychotherapy.**[5,6,7] Betasyamine is nontoxic and produces no untoward or artificially stimulating effects. In properly selected patients with low physiologic energy, Betasyamine response varies within individual limits, usually in proportion to dosage and length of administration. For greatest therapeutic benefit, Betasyamine should be accompanied by routine manipulation therapy or ambulatory activity. (Cardiac patients should be cautioned not to exceed functional capacity. Betasyamine produces no appreciable results in healthy persons.) Betasyamine has no contraindication in recommended dosage: for children 6-12, 1 to 2 tablespoonfuls Emulsion (or 5 to 10 Tablets); for patients over 12, up to 5 tablespoonfuls Emulsion (or up to 25 Tablets) daily, preferably in divided doses after meals, for at least three weeks to obtain demonstrable response.



Supplied: **Betasyamine Emulsion** (Bottles of 16 fluid ounces); **Betasyamine Tablets** (Bottles of 200).

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(1) WEST, E. S. and TODD, W. R.: Textbook of Biochemistry, The Macmillan Company, New York, 1952, pp. 1110, 1119. (2) PETERSON, R. D. et al: Federation Proc. 839: 254 (March) 1953. (3) BEST, C. H. and TAYLOR, N. B.: The Physiological Basis of Medical Practice, Williams and Wilkins Company, Baltimore, 1950, p. 392. (4) BORSOOK, M. E.; BILLIG, H. K., and GOLSETH, J. G.: Ann. West. Med. & Surg. 6:423 (July) 1952. (5) ALDES, J. H.: (Abstract) Bull. Biol. Sciences Foundation 1:4 (April) 1954. (6) DIXON, H. H. et al: West. J. Surg. Obstet. & Gynec. 62:338 (June) 1954. (7) GRAYBIEL, A. and PATTERSON, C. A.: Ann. West. Med. & Surg. 5:863 (Oct.) 1951.

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FORMULA: Betasyamine Emulsion—each tablespoonful (15 cc.) contains: Betaine (hydrate), 5.0 gm. (equivalent to 4.33 gm. betaine anhydrous); Glycocyamine, 1.0 gm. Bottles of 16 fluid ounces. **Betasyamine Tablets**—each tablet contains Betaine (anhydrous), 0.866 gm.; Glycocyamine, 0.2 gm. Bottles of 200 tablets.

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PEDIATRIC DROPS: *Cherry flavor*
Approx. 25 mg. per 5 drops.
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ORAL SUSPENSION: *Cherry flavor.*
250 mg. per 5 cc. teaspoonful.

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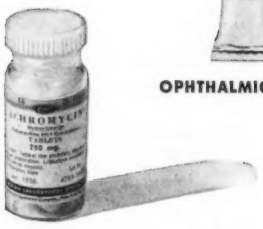
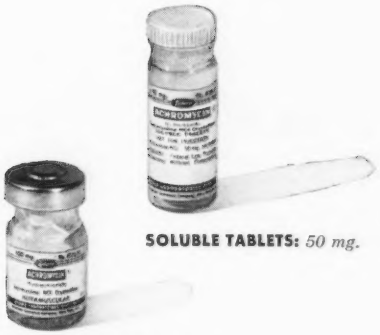


TABLETS: *250 mg., 100 mg., 50 mg.*

CAPSULES: *250 mg., 100 mg., 50 mg.*

INTRAVENOUS: *500 mg., 250 mg., 100 mg.*



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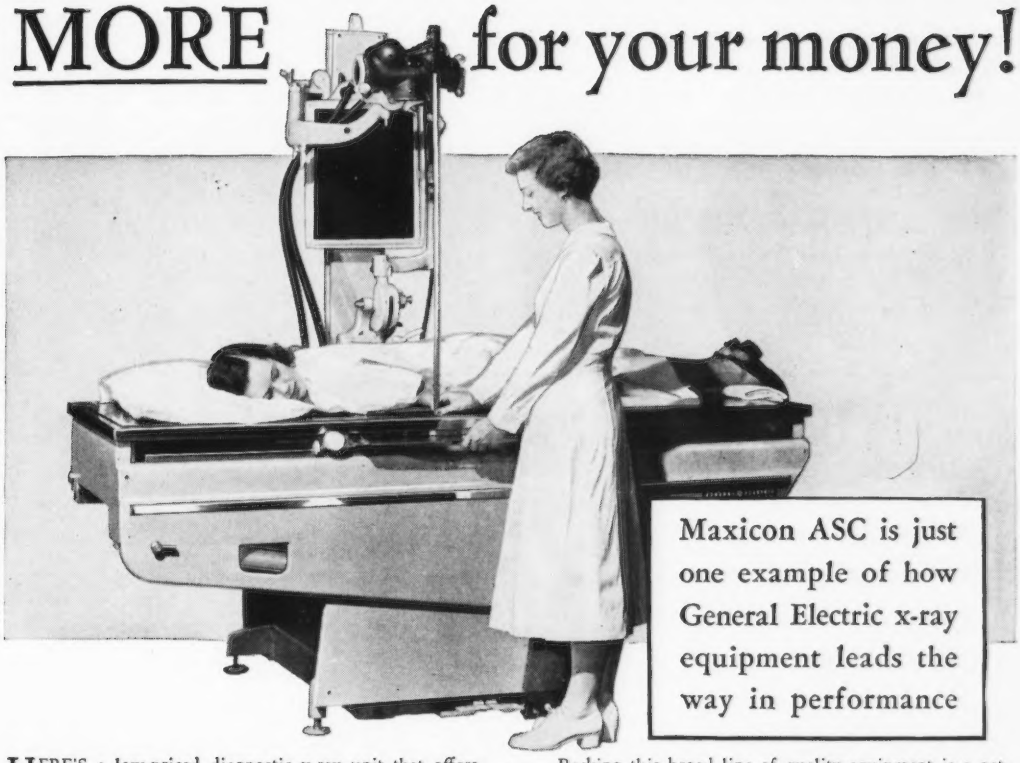

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FEATURE	MAXICON ASC	UNIT X	UNIT Y	UNIT Z
Table positions from 10° Trendelenburg to vertical	YES	YES	NO	YES
Variable speed table angulation	YES	NO	NO	NO
Radiation-protective table panels	YES	NO	NO	NO
18-in. focal-spot to table-top distance for fluoroscopy	YES	NO	NO	YES
Counterbalanced tube stand, providing adjustable focal-film distances up to 40 in.	YES	NO	NO	NO
Signal-light centering system for Bucky radiography	YES	NO	NO	NO
Provision for cross-table radiography	YES	NO	NO	NO
12-step line-voltage compensator	YES	NO	NO	NO
Automatic selection of large or small focal spot	YES	YES	NO	NO
45 x 78-in. or less space requirement	YES	NO	NO	NO

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Homeless Men Probably Spread Much TB

(Continued from Page 22)

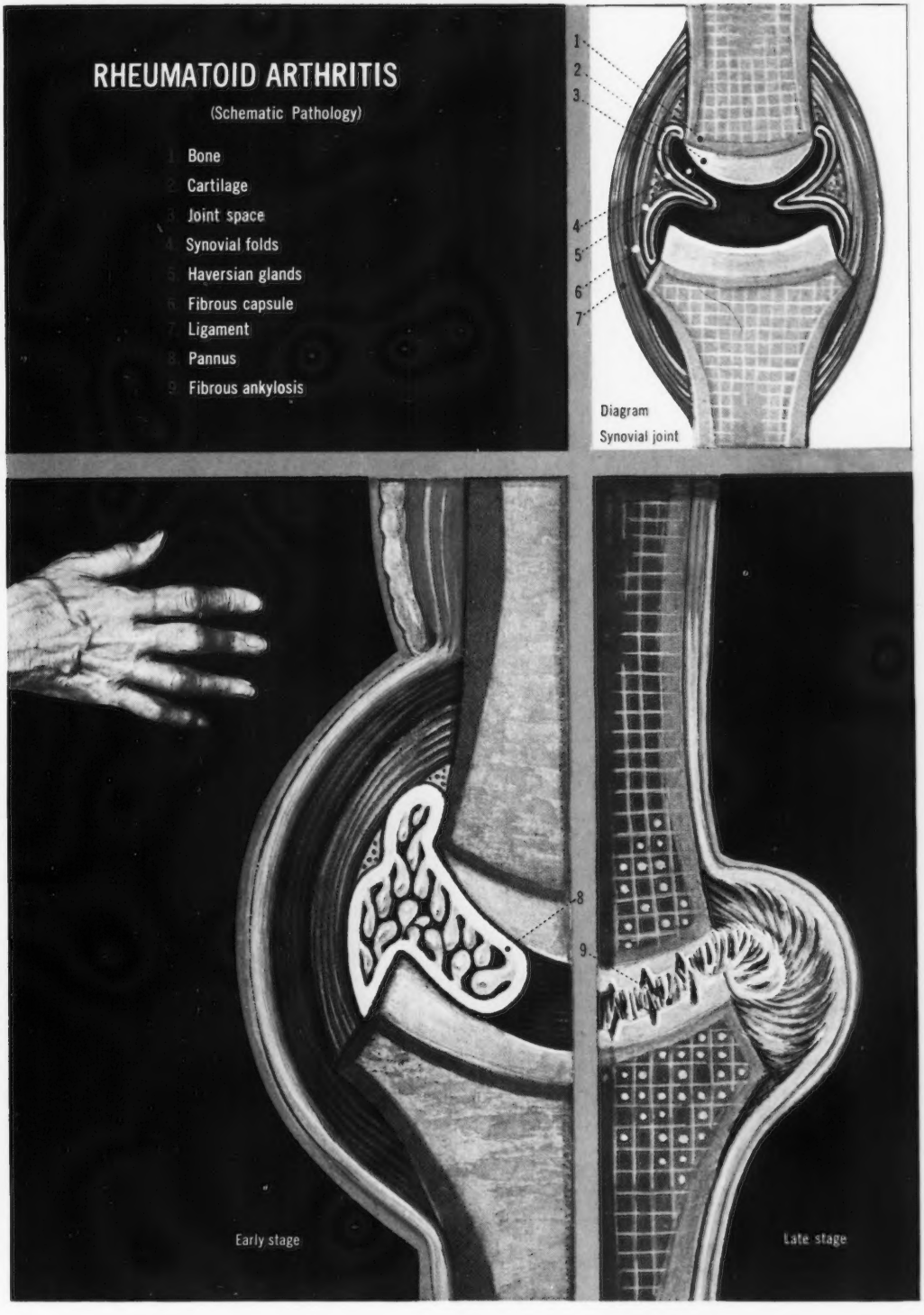
tories, whether in cheap hotels or in the various rehabilitation centers throughout the country," they said. "They are generally in a fatigued physical condition, and their standards of cleanliness and personal hygiene tend, through economic necessity, to be low.

"This rate occurs in a population group that is very likely to take temporary jobs as food handlers —cooks, cooks' helpers, dishwashers, etc.—situations in which the possibility of transmission of the disease to the general population is a factor."

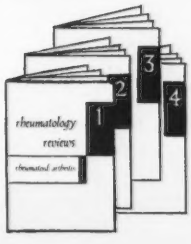
They said there is no reason to believe the incidence in Minneapolis is much different from the rate in other cities. In fact, the incidence might be higher if the survey had covered the older, more permanent residents of Skid Row, they said.

"This survey reveals an important aspect of the public health problem of tuberculosis," they said. "The homeless men quite probably constitute a primary source of reinfection for tuberculosis in the United States.

"Any public health program that has as its aim the eradication of tuberculosis in our population should take particular account of this segment of the population."



This diagrammatic representation of the pathology of rheumatoid arthritis is reproduced from Rheumatology Reviews, No. 1: "Rheumatoid Arthritis," a publication of the Medical Department of Geigy Pharmaceuticals. This brochure, and others in the same series, are available upon request.



Geigy

in rheumatoid arthritis

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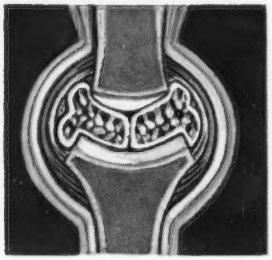
(brand of phenylbutazone)



affords:

marked relief of pain

significant functional improvement

Since it first became generally available in May, 1952, the non-hormonal, antiarthritic agent, BUTAZOLIDIN has been the subject of more than 50 clinical reports. These reports, on several thousand carefully studied cases, have established the usefulness of BUTAZOLIDIN in the more serious forms of arthritic disease.

In rheumatoid arthritis almost all workers have reported relief of pain, ranging from mild to complete, in the majority of patients. Functional improvement, sometimes quite striking in degree, has frequently been noted. Promptness of action and lack of development of tolerance are other characteristics of BUTAZOLIDIN that have been mentioned favorably.

BUTAZOLIDIN® (brand of phenylbutazone): Red coated tablets of 100 mg.

In order to ensure optimal results, with minimal risk of side reactions, physicians are urged to consult the detailed literature on BUTAZOLIDIN, available on request.

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Old "Home Remedy" Warned Against

Drinking alfalfa seed tea not only won't cure arthritis but may give the drinker skin trouble and the doctor a headache.

A Roanoke, Va., physician recently stated the skin trouble is hard to diagnose unless the doctor knows his patient has been drinking the tea. The trouble is, most patients apparently don't like to admit they've been relying on the old home remedy.

Dr. William H. Kaufman reported on two such cases in a recent issue of the *Journal of the American Medical Association*. He said he knows of no previous reports of skin trouble from alfalfa seed.

"The practice of taking alfalfa seed for the purpose of relieving arthritis, diabetes, and related disorders is apparently widespread," he said, "and there is likelihood that further cases will appear."

He said two patients suffered skin eruptions as a result of the remedy and that four other possible cases have been found. One of his two patients, an elderly woman, said she had concealed the fact that she drank the tea because she was "ashamed to admit it." The other admitted "with great reluctance" that she used the tea.

The Council on Pharmacy and Chemistry of the A.M.A. said it has received numerous questions about the value of alfalfa preparations in treating arthritis and diabetes, Dr. Kaufman said.

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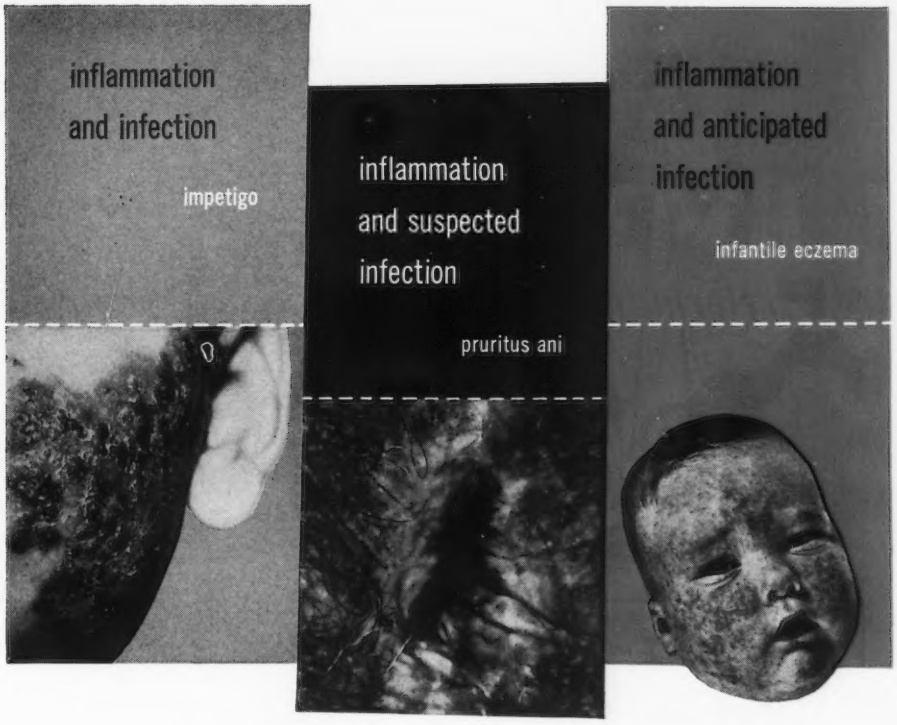

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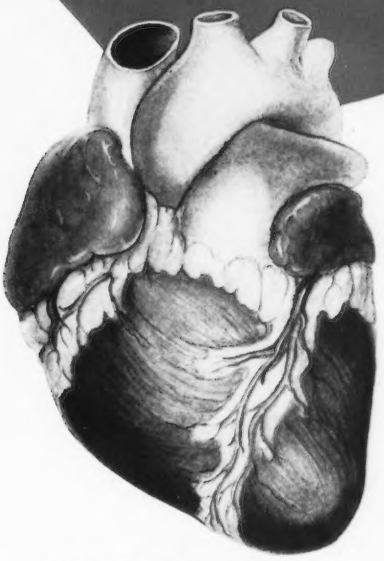

in angina pectoris... status anginosus

PENTOXYLON—combining the tranquilizing, stress-relieving, bradycrotic effects of Rauwiloid® and the prolonged coronary vasodilating effect of pentaerythritol tetranitrate (usually abbreviated PETN)—provides a completeness of treatment heretofore unavailable to angina patients.

Therapy in depth—a wholly new principle in angina therapy—for the first time encompasses effective treatment for cause-and-effect mechanisms, which goes deeper than the superficial plane of relief afforded by simple coronary vasodilatation.

Pentoxylon is not a substitute for nitroglycerin. Continued therapy with Pentoxylon can be expected to reduce markedly or abolish nitroglycerin requirements, and greatly relieve the apprehension of the patient who lives in continuous dread of the next attack.

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Available in bottles of 100 tablets.

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When winter winds howl

avert sequelae to colds—
shorten the course of infection

'PAREDRINE'-SULFATHIAZOLE SUSPENSION, S.K.F.'s highly bacteriostatic sulfonamide preparation, is ideal therapy for winter-time intranasal infections. Because it is a *suspension* of Micraform* sulfathiazole, not a solution, it clings for hours to infected mucosa. This prolonged bacteriostasis both shortens the course of nasal and throat infections, and averts more serious sequelae.

A *suspension* of 'Micraform' sulfathiazole, 5%, in an isotonic aqueous medium with 'Paredrine' Hydrobromide (hydroxyamphetamine hydrobromide, S.K.F.), 1%; preserved with orthohydroxyphenylmercuric chloride, 1:20,000.

Paredrine*-Sulfathiazole Suspension

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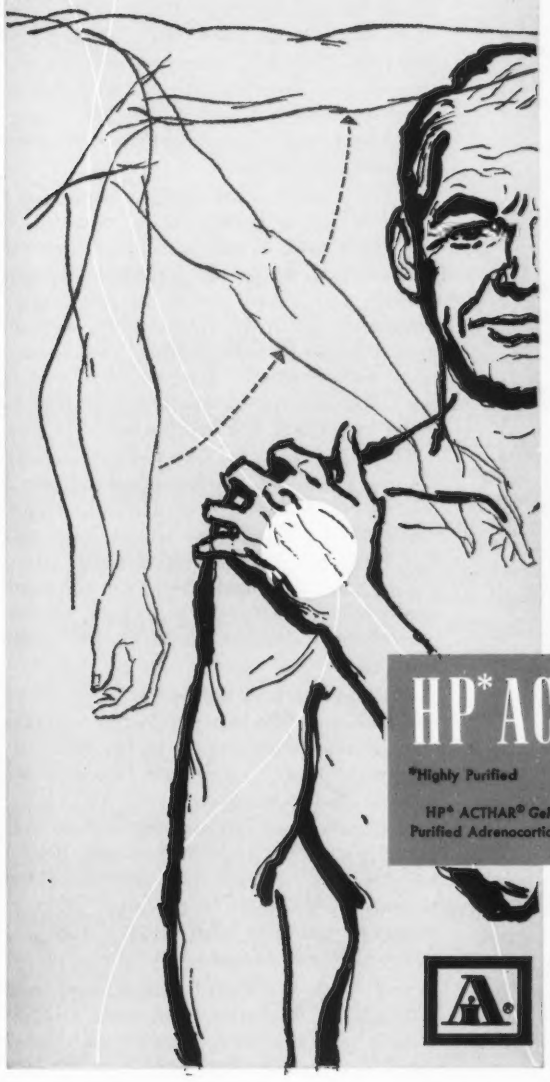
IN acute bursitis



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HP*ACTHAR *Gel*, a new repository ACTHAR with rapid response and sustained action, is as easily administered as insulin with a minimum of discomfort, whether injected intramuscularly or subcutaneously. It is economical too, far less time and money being spent to restore the patient's working ability.

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The small total dose required affords economy and virtual freedom from side actions.

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Describes Health Behind Iron Curtain

Communist boasts of good health and medical care are almost entirely false and hide the heart of the problem—the "human aspect of medicine," a study by the Free Europe Committee, Inc., shows.

Walter Henry Nelson, New York, director of magazine information for the American Heritage Foundation, reported on physicians behind the iron curtain in a recent issue of the *Journal of the American Medical Association*. He based his report on the findings of the Free Europe committee.

The iron curtain doctor is a "new Soviet man" first and a physician last, he said. He must consider his worker-patients as "economic factors," precious only so far as their health advances the world-wide Soviet power policy.

"Under Soviet-sphere state capitalism, plant physicians predetermine the number of persons entitled to be sick," Nelson said. "Physicians are afraid to grant sick leave to too many persons, for this would tend to show that they are not taking sufficient care of the workers' health. Yet poor diet, constant nervous tension, and excessively high work norms make adequate care difficult."

While physicians are officially allowed to practice privately, few do because of the required "exhausting" day's work at state institutions, because of exorbitant taxes on private income, and because few persons can afford private consultation. Private practice probably is allowed only because "Communist bosses hesitate to patronize the state institutions, the conditions of which they know only too well." Officials' physicians live well. The rest earn about as much as a skilled worker.

Medical students are accepted by class origin and political reliability, and must pass not only medical courses but tests on politics and military principles. They are not allowed to choose their specialties. The Five-Year Plan determines what kind of physicians are needed and where, and a committee annually selects students for each field, a former Hungarian medical school lecturer told Radio Free Europe.

A Bulgarian who escaped from the Soviet zone told RFE that "the best way to recommend a physician in Sofia these days is to say he is of prewar academic vintage" and trained before the strict new policies became effective.

Medical science also has suffered by the outlawing of certain Western scientific principles. If a doctor gets good results with a "forbidden" treatment, he must credit some other cause, or pretend the treatment was just introduced, "with a gigantic 'Made in Russia' tag attached."

Stalin's ideas remain the basic medical scientific principles, a Bucharest publication said, and as a result physicians "lack humility and a sense of respect for the individual and often are brutal and insulting."

(Continued on Page 46)

BASIC IN ALL GRADES OF ESSENTIAL HYPERTENSION

Crystoserpine

CRYSTALLINE RESERPINE, DORSEY

now regarded as the chief active principle of Rauwolfia Serpentina*

Increasing experience continues to show that Rauwolfia serpentina is as basic in essential hypertension as digitalis is in congestive heart failure. Furthermore, recent evidence* demonstrates that reserpine possesses the unique antihypertensive, sedative, and bradycrotic properties characteristic of this unusual drug. On the basis of this study, reserpine is regarded by these investigators as the chief active principle of Rauwolfia serpentina.

Crystoserpine—reserpine, Dorsey—is valuable in all grades of essential hypertension. In the milder forms and in labile hypertension, it usually suffices alone. In the more severe forms, it reduces the amounts required of more potent antihypertensive agents.

In addition to lowering the blood pressure through central action, Crystoserpine induces a state of calm tranquility. Emotional tension is eased, the outlook improved.

There are no known contraindications to Crystoserpine. Average dose, 0.25 mg. to 1.0 mg. daily. Supplied in 0.25 mg. scored tablets.

* Wilkins, R. W.; Judson, W. E.; Stone, R. W.; Hollander, William; Huckabee, W. E., and Friedman, I. H.: Reserpine in the Treatment of Hypertension: A Note on the Relative Dosage and Effects, New England J. Med. 250:477 (March 18) 1954.

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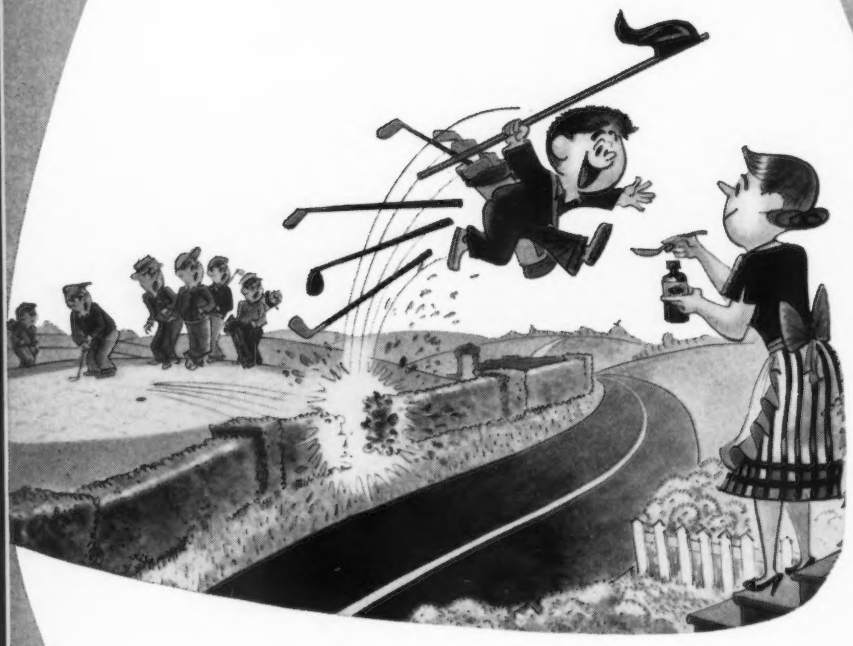

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A full day's serving
of eight important vitamins
(including 3 mcg. of body-building B_{12})
in each golden spoonful.

Each 5-cc. teaspoonful of VI-DAYLIN contains:

Vitamin A	3000 U.S.P. units
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Thiamine Hydrochloride	1.5 mg.
Riboflavin	1.2 mg.
Pyridoxine Hydrochloride	0.5 mg.
Ascorbic Acid	40 mg.
Vitamin B_{12}	3 mcg.
Nicotinamide	10 mg.

kids love VI-DAYLIN right from the spoon

Delicious lemon-candy flavor and aroma. No pre-mixing, no droppers, no refrigeration. Mixes easily in milk, cereals or juices. Now with B_6 added. In 90-cc., 8-fluidounce and economical one-pint bottles. Abbott

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*Kaufman, R. H.; Mendelowitz, S. M., & Ratzan, W. J.: *Am. J. Obst. & Gynec.* 65:269, 1953.

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MEDICAMENTA VERA

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DETROIT, MICHIGAN

Describes Health Behind Iron Curtain

(Continued from Page 40)

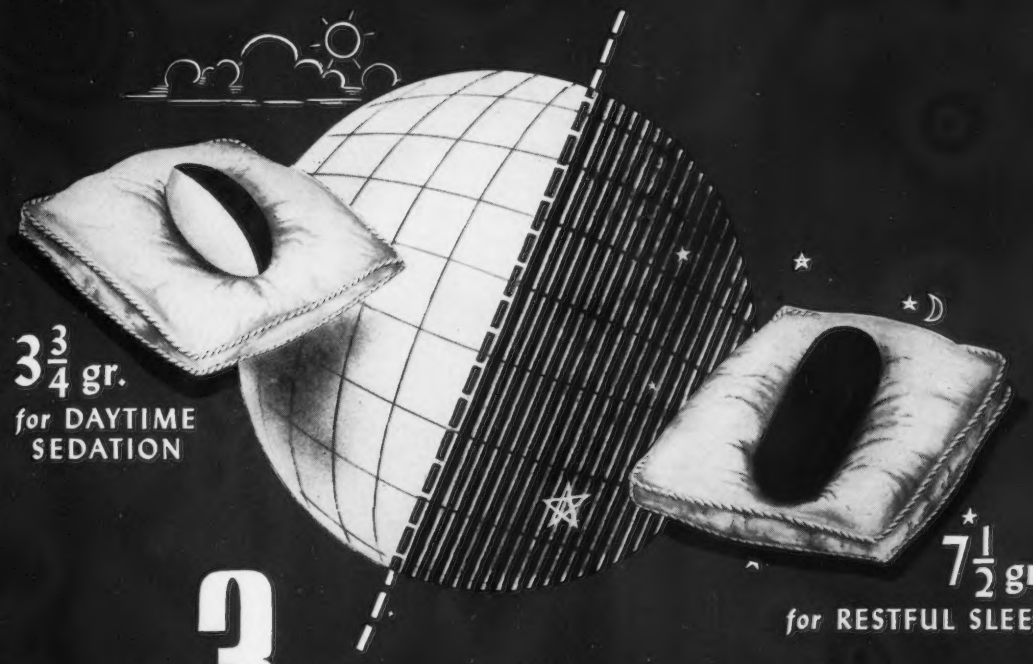
State medicine burdens the physician with clerical work and adds official mismanagement to his woes. A district physician may work 36 hours straight, being responsible for as many as ten thousand persons. One medical center in Budapest serves a quarter million.

A Sofia newspaper said the Pavlov general hospital has no heat, incredible plumbing, no elevator, little furniture, and a leaky roof.

"Such discomforts are not shared equally by all persons," Nelson said. "Far from intending to bring about the 'equality' it does propose, Soviet-style medicine serves to further an intentional stratification enabling the rulers to favor their friends and doom their opponents.

"Medical aid is made available in proportion to the patient's contributions to the aims of the ruling hierarchy, and only incidentally according to actual needs in purely medical terms. In the light of the foregoing facts, it appears that the 'new' Communist medical services compound injustice, restrict the right to health, take away all benefit to physician and patient alike, and enable the state to decide who will be rewarded with the gift of good health," he said.

(Continued in Back Advertising Section, Page 60)



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Three Unusual Operations Near Heart Described

Surgical success with new techniques and wider use of blood vessel grafts for patients with serious and unusual vessel disorders was reported recently by physicians from New York City, Chicago and Houston.

Three operations were described in a recent issue of the *Journal of the American Medical Association.*

In Chicago, three doctors successfully cut and relocated a misplaced vein which pressed against the windpipe and aorta and was threatening to suffocate a five-months-old baby. Without the operation there seemed little hope for the infant's life, they said.

In Houston, in perhaps the first operation of its kind, a patient's circulation was stopped for an hour while a new section was grafted into a faulty main artery just above the heart. The patient suffered no apparent damage to the spinal cord or vital organs which usually follows stoppage of circulation for even a few minutes. "Freezing" the patient by gradual cooling for several hours before the operation prevented damage.

A New York operation indicates a successful surgical method is now available in the "desperate plight" of patients suffering closure of the main blood vessel leading into the heart. Doctors used a preserved arterial graft to start circulation again.

The Chicago infant had trouble breathing just after birth, and at five months "it had become obvious that one of the constantly recurring attacks . . . would prove fatal," Drs. William J. Potts, Paul H. Holinger and Arthur H. Rosenblum said. They said the child's condition was "unique."

"The future of the child was hopeless" unless something could be done, while an operation was dangerous and might accomplish nothing, the physicians said. The parents agreed to the attempt. The child's left pulmonary artery, which carries blood from the heart to the lungs, was cut, moved to its normal position, and sewed together. Since then the baby has been free of trouble except for occasional noisy breathing.

Drs. Michael E. DeBakey and Denton Cooley, Houston, said they performed what appeared to be the first successful graft on the aorta where it arches over the heart. This is the trunk from which the entire arterial system proceeds. Grafts have been used on straight portions of vessels in similar cases of aneurysms, or balloon-like swellings in the vessel wall. Grafting of the aorta above the heart has been limited because of the increased danger of blood-deficiency damage to vital organs.

The physicians said their success indicates that "freezing" the patient is an effective way of slowing circulation for long periods while grafts are performed above the heart. Attempts to provide detours

(Continued in Back Advertising Section, Page 66)

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California MEDICINE

OFFICIAL JOURNAL OF THE CALIFORNIA MEDICAL ASSOCIATION

Volume 81 OCTOBER 1954 Number 4

Valvular Heart Disease

The Role of Cardiac Catheterization in Preoperative Evaluation

ARTHUR SELZER, M.D., San Francisco, and
HERBERT W. BRADLEY, M.D., Yuba City

• Cardiac catheterization studies performed in research laboratories showed that advanced mitral stenosis is associated with a characteristic dynamic pattern which is reversible by mitral valvulotomy. In the process of the selection of patients for mitral valvulotomy, occasionally there are instances in which a decision cannot be reached on the basis of ordinary clinical methods of examination. In some such cases cardiac catheterization may be of decisive value by demonstrating, or by failing to demonstrate, the dynamic pattern of mitral stenosis. Cases in which this diagnostic procedure is most often helpful are those of mild mitral stenosis and those in which there are combined valvular defects.

ACQUIRED VALVULAR HEART DISEASE is gradually entering the category of surgically correctible cardiac lesions. Recent strides in the development of surgical techniques for valvular repair suggest that the time may be near when a comprehensive cardiac valvuloplastic operation will be feasible. At present, however, the only operation that has been generally accepted and shown to give satisfactory results with low mortality rate is the correction of mitral stenosis by finger fracture or valvulotomy. The excellent results that may follow such an operation have been attested by clinical observations on large series of patients with mitral stenosis. However, it remained for the quantitative circulatory studies by means of cardiac catheterization to show conclusively the dramatic improvement in circulatory dynamics that may occur after operation, thereby satisfying skeptics that the clinical improvement is not due to prolonged bed rest and nonsurgical or extracardiac influences.

Thus, cardiac catheterization plays a major role in the assessment of operations on the heart. Its main value, however, lies in permitting the collection of hemodynamic data in a research laboratory in series of cases rather than its use as a diagnostic procedure in an individual case. This is largely due to the fact that in left sided valvular lesions cardiac catheterization provides only inferential information and not direct diagnostic details which are so helpful in congenital cardiac defects affecting the right heart. The purpose of this discussion is to present briefly the contribution of cardiac catheterization to the diagnosis of left sided lesions, and to cite specific instances in which such a method may help to decide whether operation is indicated in an individual case.

The comprehensive catheterization study necessary for the assessment of valvular cardiac lesions can only be performed in a fully equipped research laboratory. It should be done in a condition as close to a basal state as possible, with preparations similar

From the Medical Service, Veterans Administration Hospital, and the Department of Medicine, Stanford University School of Medicine.

Supported by a grant from Monterey County Heart Association.

Presented before a Joint Meeting of the Sections on General Medicine, General Surgery and Anesthesiology at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

to those for a standard basal metabolism test. The essential equipment includes a reliable recording system capable of reproducing graphically undistorted pressure tracings. Oxygen consumption should be measured by the analysis of expired air and the total ventilation and respiratory quotient included in the measurements. A simple and readily reproducible exercise test lasting seven to ten minutes should be available to be performed by the patient in recumbent position. Pressure tracing should be recorded from the "wedge" position* in the pulmonary arterial branch simultaneously with an electrocardiographic tracing for the purpose of timing. Pulmonary arterial pressure should be observed before and during exercise. Right ventricular and right atrial curves should be recorded with special care in assessing the "zero" reference point in relation to the thorax. Determination of cardiac output by the Fick principle should be made before exercise and during the last three minutes of the exercise period with samples of mixed venous blood withdrawn from the main pulmonary artery.

It is generally agreed that in pure mitral stenosis cardiac catheterization is not necessary as a routine preoperative procedure. However, there are situations in which the degree of mitral stenosis has to be assessed by more accurate procedures than the routine physical examination and electrocardiographic and roentgenographic evaluation. In such instances cardiac catheterization frequently becomes the method of choice.

The average hemodynamic findings in a typical case of mitral stenosis and the change which takes place after successful valvulotomy are presented in the following case summary.

CASE 1. A 37-year-old man had pronounced limitation of activities due to dyspnea and tiredness. He could only engage in semisedentary work. Upon physical examination findings typical of mitral stenosis were noted—a loud diastolic and presystolic rumbling murmur in the apical region of the heart, with a loud first sound in this area, a prominent mitral opening snap and an accentuated and reduplicated second sound at the left upper sternal border. An electrocardiogram revealed a vertical rotation of the heart with prominent R-waves and inverted T-waves in precordial leads V_1 and V_2, suggestive of an enlarged right ventricle, and tall and bifid P-waves. A roentgenogram of the thorax showed no generalized cardiac enlargement but there was evidence of dilation of the left atrium and of the pulmonary artery. The hemodynamic data are presented in Chart 1, where it can be seen that moderately severe pulmonary hypertension, low cardiac output (cardiac index) and increased arteriovenous difference were present. During exercise there was a decrease, instead of an increase, in the cardiac index. Such

*The catheter wedged firmly into a smaller branch of the pulmonary artery records not pulmonary arterial pressure but a pressure curve reflecting the dynamic events in the left atrium.

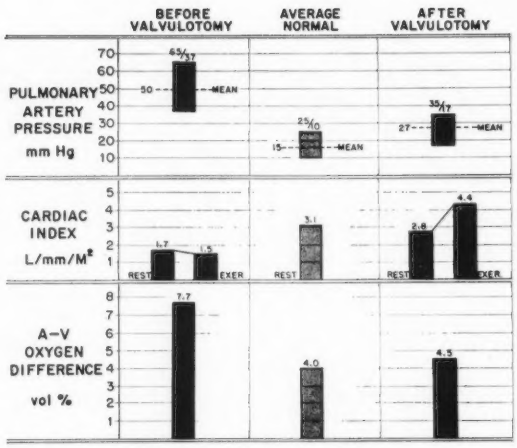

Chart 1.—Graphic presentation of the essential findings on cardiac catheterization before and after mitral valve operation in Case 1. The central column represents average normal values.

findings, with the addition of an elevated pressure reading in the pulmonary wedge position (which was not obtained in this case) can be considered as characteristic for advanced mitral stenosis. The patient underwent mitral commissurotomy and the tolerance for exercise was so much increased after the operation that he could do strenuous work ten hours a day without discomfort.

Upon examination a year after operation the heart sounds and murmurs were essentially unchanged from those heard preoperatively. However, the electrocardiographic evidence of right ventricular hypertrophy was no longer present and in a roentgenogram of the chest the left atrial and pulmonary arterial segments appeared more nearly normal. Hemodynamic data (Chart 1) showed only slightly elevated pulmonary arterial pressure, a cardiac output (index) well within normal limits, and a normal increase in circulation on exercise.

It appears from the foregoing presentation that an eminently successful operation reverted the circulatory changes of advanced mitral stenosis into those of mild stenosis. The persistence of auscultative symptoms and the mild elevation of the pulmonary arterial pressure leaves no doubt that a narrowing of the mitral orifice was still present. However, barring restenosis of the mitral orifice, the degree of circulatory derangement could well be consistent with a normal or almost normal life expectancy and a reasonably active life. This is worthy of emphasis in view of some diagnostic difficulties which may arise in milder cases of mitral stenosis, as is exemplified in the following case.

CASE 2. The patient, a 30-year-old woman, said she had had limitation of activities consisting of a feeling of exhaustion associated with some shortness of breath both at rest and during exercise for a

TABLE 1.—*Cardiac catheterization findings in Case 2*

Pulmonary wedge pressure	9 mm. mercury
Pulmonary artery at rest	21/14 mm. mercury (mean 16)
Pulmonary artery during exercise	26/15 mm. mercury (mean 17)
Right ventricle	20/2 mm. mercury (mean 10)
Cardiac output (index) at rest	3.7 liters per min. (index 2.5 lit/min/m^2)
Cardiac output (index) during exercise	4.5 liters per min. (index 3.1 lit/min/m^2)

TABLE 2.—*Cardiac catheterization findings in Case 3*

Pulmonary wedge pressure	30 mm.mercury (mean 30)
Pulmonary artery at rest	52/33 mm. mercury (mean 42)
Pulmonary artery during exercise	69/36 mm. mercury (mean 55)
Right ventricle	55/8 mm. mercury (mean 29)
Cardiac output at rest	2.9 liters per min. (1.4 lit/min/m^2)
Cardiac output during exercise	4.3 liters per min. (2.2 lit/min/m^2)

period of over three years. Upon auscultation the classical findings of mitral stenosis were noted—namely, a loud diastolic rumbling apical murmur with a presystolic accentuation, loud first sound, an opening snap and an accentuated second pulmonary sound. A roentgenogram of the chest showed mild enlargement of the shadow of the left atrium. An electrocardiogram showed a normal record with a bifid P-wave. Cardiac catheterization was performed with results shown in Table 1. Intracardiac, pulmonary arterial and wedge pressures were entirely normal and the cardiac index was within normal limits and increased with exercise. The clinician evaluating this case had some doubt in accepting at face value the patient's story of limitation of activities. The data obtained on cardiac catheterization proved of great value, for they permitted the conclusion that authentic cardiac symptoms were absent or unimportant and that tiredness and "shortness of breath" were in reality manifestations of neurocirculatory asthenia. Obviously, surgical therapy of mitral stenosis was not indicated even though the classical physical findings of pure mitral stenosis were present.

Mitral insufficiency presents an important problem in the preoperative evaluation of patients with rheumatic heart disease. Severe mitral insufficiency constitutes a contraindication to mitral valvulotomy. The diagnosis of mitral valve disease with predominant mitral insufficiency may be easy in its typical form, when a loud apical systolic murmur is heard and is conducted to the left scapula, and when evidence of left ventricular enlargement is found upon physical examination and by electrocardiogram and roentgenogram. However, in many instances the unknown extent of mitral insufficiency in a case of mitral stenosis severe enough to warrant surgical consideration may present great difficulty. In such cases supplementary information is sought by a fluoroscopic or kymographic study of the motion of the left atrium during systole, by cardiac catheterization or by angiocardiography. Cardiac catheterization may on occasion supply definitive information, which is exemplified by the following case.

CASE 3. A 43-year-old man with rheumatic heart disease had moderate to severe limitation of activities due to dyspnea. Some months before the present hospital admission, there was a bout of cardiac failure which was promptly controlled by the use of digitalis and a brief course of mercurial diuretics. Upon auscultation a long and loud rumbling apical diastolic murmur, a mitral opening snap and a reduplicated second pulmonic sound were noted. In addition there was a moderately loud systolic murmur which was heard at the apex and along the sternal border up to the base of the heart. At the lower left sternal border a soft blowing early diastolic murmur was also heard. The blood pressure was normal. An electrocardiographic tracing was suggestive of hypertrophy of both ventricles. A roentgenogram of the chest showed an enlarged left atrium, a moderately large pulmonary artery segment and an enlargement of both cardiac ventricles.

Cardiac catheterization was performed with the results shown in Table 2. Elevated wedge pressure and moderately elevated pulmonary artery pressure with considerable increase on exercise were indicative of mitral stenosis of considerable severity. However, a pressure tracing from the pulmonary wedge position (Figure 1) showed a prominent systolic wave which was thought to be caused by significant mitral regurgitation. Furthermore, it was noted that the cardiac output was very low but increased in a normal manner with exercise. Such a response is seldom seen in "tight" mitral stenosis where mechanical obstruction limits the flow through the mitral orifice (see Chart 1). Thus the data obtained by cardiac catheterization suggested that in this case mitral insufficiency was not only present but that its effect predominated in the dynamic pattern of the circulatory derangement. On the basis of these findings it was felt that the patient probably would not benefit from operation on the mitral valve, and could easily be made worse.

CASE 4. A somewhat similar clinical problem was present in the case of a 39-year-old man whose activities were severely curtailed by dyspnea and weakness and who was gradually becoming worse.

An apical diastolic rumbling murmur was heard, with an accentuated first sound. The second pulmonary sound was very loud. A moderately loud systolic and a faint early diastolic murmur were heard at the lower left sternal border with the systolic murmur conducted to the left axilla on one hand, and to the base of the heart and the great vessels on the other hand. A totally irregular pulse was noted. The pulse pressure was normal. An electrocardiogram revealed atrial fibrillation and a "balanced" pattern

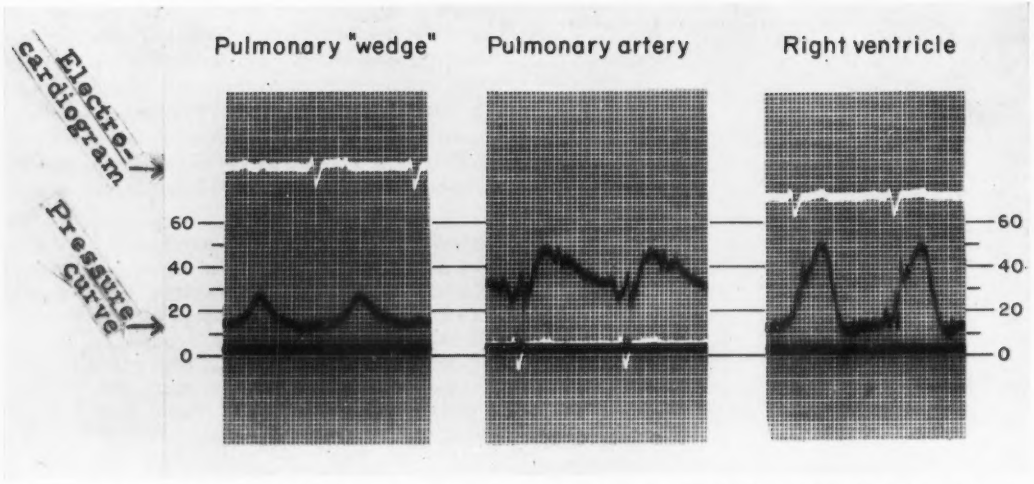

Figure 1.—Reproduction of the pressure tracings from the pulmonary "wedge" position, the main pulmonary artery and the right ventricle in Case 3. The high systolic wave in the pulmonary wedge tracing is characteristic of mitral insufficiency.

of the ventricular complexes suggesting hypertrophy of both ventricles. A roentgenogram showed enlargement of all the cardiac chambers.

Cardiac catheterization (Table 3) showed moderate to severe elevation of pressure in the pulmonary wedge position, in the pulmonary artery and the right ventricle. A steep further increase in pressure occurred upon exercise. The cardiac output was very low and showed an insignificant increase on exercise. It was thought in this case that the dynamic pattern of mitral stenosis predominated to such an extent that mitral valvulotomy might reasonably be expected to relieve some of the disability, and in view of the progression of symptoms the surgical risk appeared justified. Mitral valvulotomy was performed and tight mitral stenosis and a mild regurgitant jet were observed.

The illustrative case summaries presented cite actual instances in which cardiac catheterization played a major role in deciding whether or not cardiac operation was advisable in a given patient. They exemplify the main problems in which help can be expected from this procedure. It is obvious that cardiac catheterization is not necessary in the average case of mitral stenosis in which the lesion has led to the appearance of incapacitating symptoms. The effect of mitral stenosis upon cardiodynamics is well enough known so that alteration of pressures and flows can roughly be predicted from the results of conventional methods of examination. Since cardiac catheterization does not directly prove or disprove the presence of mitral stenosis (the evidence is not conclusive as it is in pulmonary stenosis), one has to rely on the pattern of findings usually associated with significant degree of mitral valve narrowing. This "hemodynamic pattern" of mitral stenosis is

TABLE 3.—*Cardiac catheterization findings in Case 4*

Pulmonary wedge pressure	25 mm. mercury (mean 25)
Pulmonary artery at rest	58/33 mm. mercury (mean 45)
Pulmonary artery with exercise	90/60 mm. mercury (mean 72)
Right ventricle	60/2 mm. mercury (mean 27)
Cardiac output at rest	2.3 liters per min. (index 1.2 lit/min/m²)
Cardiac output during exercise	2.5 liters per min. (index 1.3 lit/min/m²)

TABLE 4.—*Hemodynamic pattern of mitral stenosis*

	mm. Mercury	Liters min./m.²	Normal — mm. Mercury	Normal — Liters min./m.²
Pulmonary wedge pressure	20-40		5-10	
Systolic wave	> 5			
Pulmonary artery pressure:				
Systolic	< 50		20	
Mean	< 30		12	
Cardiac index		1.5-2		3.1

Effect of exercise: (a) Further increase in pulmonary artery pressure; (b) Static cardiac index.

summarized in Table 4. The pattern is of course not specific for mitral stenosis; each of the components occurs in other forms of cardiac disease.

Pulmonary wedge pressure constitutes the most important diagnostic finding associated with tight mitral stenosis. It has been shown that pressure reading and the shape of the curves obtained from the pulmonary wedge position reflect closely the dynamic events in the pulmonary veins and in the left atrium. Thus, pulmonary wedge pressure is elevated in mitral stenosis, in left ventricular failure and in left sided constrictive pericarditis. Since the

latter two conditions can usually be eliminated diagnostically on clinical grounds, elevation of pulmonary wedge pressure constitutes not only an important confirmatory finding of mitral stenosis, but a rough index of its severity. Conversely, the absence of elevation of pulmonary wedge pressure makes the diagnosis of significant mitral stenosis untenable. The finding of pulmonary hypertension with a normal pulmonary wedge pressure proves that pulmonary resistance is elevated at the level of the pulmonary arterioles, and in such circumstances clinical signs of mitral stenosis cannot be considered to be of surgical importance. The effect of mitral regurgitation upon the pulmonary wedge pressure is the appearance of a prominent systolic wave of more than 5 mm. of mercury. In severe mitral insufficiency the wedge pressure curve may exhibit a pulse pressure of over 20 mm. of mercury. The diastolic part of the curve shows the pressure to be normal unless significant mitral stenosis is also present or left ventricular failure ensues. While the presence of a significant wave of mitral insufficiency is of great diagnostic importance, its absence does not rule out mitral regurgitation.

Pulmonary hypertension occurs as a rule in significant mitral stenosis but is of no diagnostic importance because of its common occurrence in other cardiac conditions. The degree of pulmonary hypertension, however, permits distinction between early cases, in which moderate elevation of pulmonary arterial pressure is found, and advanced cases in which severe pulmonary hypertension indicates secondary changes in the pulmonary arterioles. The first form may be completely reversible by mitral valvulotomy, while the second form is only partially reversible. In mitral stenosis pulmonary arterial pressure almost always rises during exercise.

Low cardiac output with the patient at rest is found in the majority of cases of mitral stenosis. Often this phenomenon occurs early in the course of the disease, when pressures are only mildly elevated. It is, however, found also in most forms of cardiac failure and is therefore a non-specific finding. More important than the finding of a low resting output is the response of output to exercise. In cardiac failure the cardiac output increases on exercise (although not as much as in health) with the exception of some cases of very severe cardiac insufficiency. As a rule, static cardiac output means that a mechanically limiting factor exists within the heart and therefore points to severe stenosis of one of the four cardiac orifices. The static cardiac output in severe mitral stenosis is reversible by operation on the mitral valve (Chart 1).

The data obtained from the previously mentioned measurements during cardiac catheterization permit an estimation of the size of the mitral orifice by available formulae. However, the accuracy of these formulae has not been generally accepted and the numerical expression of the size of the mitral orifice as thus computed may be irrelevant once the diagnosis of tight mitral stenosis is established and the indication for operation ascertained.

Thus, the comprehensive pattern of the effect of mitral stenosis upon cardiodynamics may be utilized in doubtful cases in presurgical evaluation. As exemplified by the three case summaries, aid obtained from cardiac catheterization is greatest in two categories of cases. The first category is mild mitral stenosis, where the extent of disability and its connection with the valve defect cannot be determined with certainty by ordinary clinical means. In such cases normal or almost normal cardiac dynamics make it most unlikely that the patient suffers from the result of mitral valve obstruction, and therefore unlikely that operation on the valve would be of benefit. Conversely, the dynamic pattern of significant mitral stenosis exists occasionally in cases in which cardiac strain and enlargement are not yet recognizable by electrocardiographic and roentgenographic changes. In such instances mitral stenosis may cause incapacitating symptoms which might be relieved by operation even though clinical findings as regards the heart are within normal limits and lead to erroneous conclusion that symptoms are extracardiac.

In combined valvular lesions it is important to determine whether mitral stenosis is the predominant lesion and is primarily responsible for the incapacitating symptoms, for in such cases mitral valvulotomy can be of benefit. In patients with combined valvular defects various findings of the catheterization study may be used in differential diagnosis. The most important feature of the dynamic pattern of mitral stenosis in such cases is the low and static cardiac output, which, in the absence of severe aortic stenosis, strongly suggests tight mitral stenosis, for usually in mitral or aortic insufficiency there is some increase of blood flow on exercise. Elevated pulmonary arterial pressure may be present in mitral insufficiency or in aortic valve defects combined with left ventricular failure. However, severe pulmonary hypertension is strongly indicative that mitral stenosis is predominant. Finally, pulmonary wedge pressure may reveal the presence of mitral insufficiency.

Cardiac catheterization is a complex diagnostic procedure that should be performed primarily in a research laboratory. Routine use of the procedure as an aid to preoperative diagnosis in valvular heart disease is neither indicated nor desirable. It does, however, provide a way to get information, in cases in which diagnosis is in doubt, that cannot be obtained by any other means, thus permitting the preoperative assessment of some such cases.

450 Sutter Street.

Blood Volume in Cardiac Decompensation

Determinations by Use of Radiochromium

WILLIAM A. REILLY, M.D., R. M. FRENCH, M.D., F. Y. K. LAU, M.D., K. G. SCOTT, Ph.D., and WILLIAM E. WHITE, San Francisco

• *Radiochromium has these advantages for the measurement of whole blood volume: it remains in the erythrocytes many hours; it can be measured easily and accurately; the amount of radiation from it is very low.*

As measured by the radiochromium method, the whole blood volume of normal patients was determined to be 65.6 cc. ± 5.95 cc. per kilogram of body weight or 2.49 ± 0.28 liters per square meter of body surface.

In a majority of a series of patients with heart disease, hypervolemia was found during right ventricular failure but not in those having left ventricular failure or mitral stenosis alone.

IN CONGESTIVE HEART FAILURE, the blood volume has been considered generally to be increased.[1, 2, 5, 6, 7] Recently Prentice and co-workers[9] and Ross and co-workers,[11] by tagging erythrocytes with P^{32} obtained evidence that the blood volume during heart failure is not always increased.

Nylin and Hedlund[8] in 1947 summarized the opinions of various investigators regarding the efficiency of various methods of determining the volume of blood. They concluded that the dye and carbon monoxide methods may result in falsely high values because of leakage of dye from the vascular system and because carbon monoxide leaves the erythrocytes and goes to myoglobin. More accurate determinations of blood volume probably can be made by using radioisotopes to tag erythrocytes.[3,4,5,7,9,12]

In the present study radiochromium was selected as the tagging material for the following reasons:[10] It passes into the erythrocytes in vitro if used in the sodium chromate form; it remains in the erythrocytes for 12 to 24 hours approximately at the original concentrations, permitting unhurried and accurate measurements; it emits mainly gamma rays which are detected efficiently by a scintillation counter; the radiation dosage to the subject is low and is not dangerous.

METHOD

Ten milliliters of heparinized blood was withdrawn into a sterile rubber-stoppered tube containing 10 to 15 microcuries of sodium chromate ($Na_2Cr^{51}O_4$ of high specific activity* carried by no more than 100 to 300 micrograms of inert chromium. The sample was gently agitated by a shaker for 45 minutes at room temperature to permit maximal uptake. This was 60 to 98 per cent of the Cr^{51} as $Na_2Cr^{51}O_4$ by the erythrocytes. The uptake is inversely proportional to the amount of carrier chromium present. The excess $Na_2Cr^{51}O_4$ and plasma was removed by washing and centrifuging (1559 gravities) the red cells three times with normal saline solution. The cells were resuspended to approximately the original volume by adding normal saline solution; an aliquot of 0.5 ml. of this cell-saline mixture was diluted to 50 ml. for a standard, used for determining the number of counts per ml. injected. The carefully noted volume remaining of the cell-saline mixture was injected intravenously into the patient.

In subjects with normal circulation, complete mixing of the injected material with the circulating blood required between 10 and 15 minutes but in some patients with cardiac disease 30 minutes was necessary. To be safe, samples (5 to 7 ml.) were taken for measurement 60 minutes after injection.

The blood volume, which is apparent and not truly total, was measured on the sample of whole blood, rather than the erythrocyte mass, in order to avoid the differences between the hematocrit of blood from large vessels and the hematocrit of all the blood in the body. Although it was not done, it would have been possible to compute the erythrocyte and plasma volumes by using the hematocrit values. The formula, employing the dilation of the tagged dose, was:

$$\text{Blood volume in cc.} = \frac{\text{Total counts per second of injected } Cr^{51}}{\text{Counts per second per cc. of blood withdrawn}}$$

The reliability of the method was tested by reinjecting each of 17 patients with a second larger

From the Radioisotope Unit and the Medical Service, Veterans Administration Hospital, San Francisco 21, California, and the Department of Radiology, University of California School of Medicine, San Francisco.

Presented in part at the combined meeting of the Section on General Medicine, California Medical Association, and the California Heart Association, Los Angeles, California, May 9-13, 1954.

*The sodium chromate[51] was obtained from either Oak Ridge National Laboratory or the Abbott Laboratories of North Chicago.

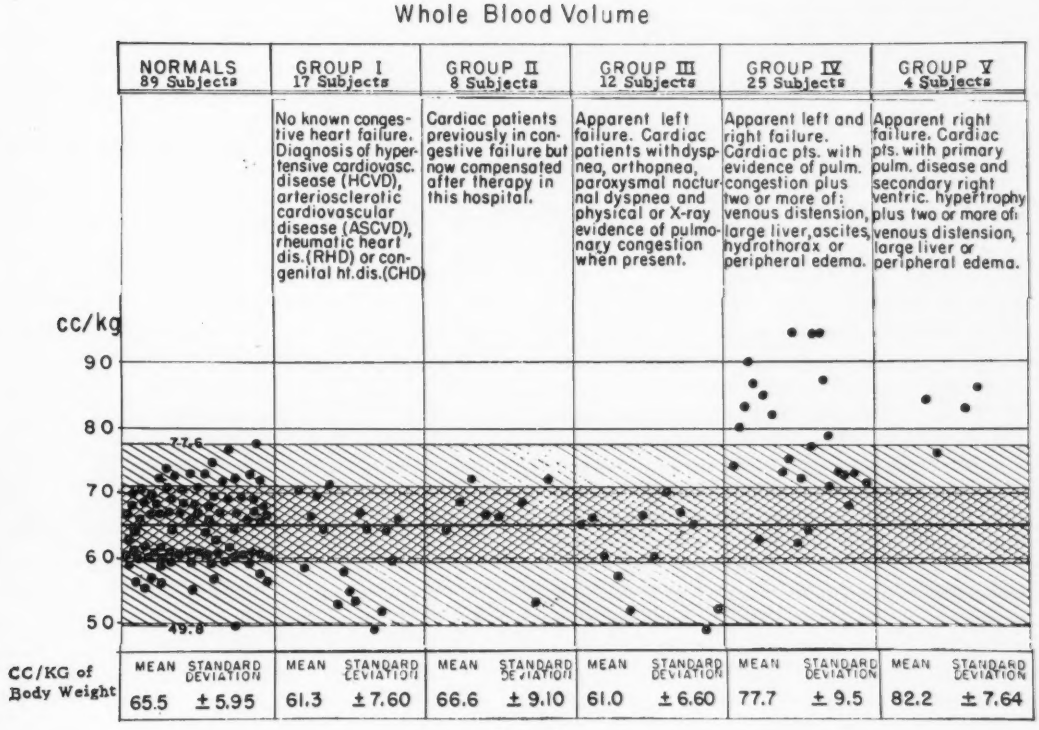

CHART 1

dose of Cr^{51} one hour after the first dose. The differences between the two computations of total volume ranged from as little as 30 cc. to as much as 540 cc. or from 0.4 per cent to 10 per cent.

CLINICAL TESTS

Normal values were determined on 89 adult males, mostly ambulatory, who were awaiting elective surgical repair of such conditions as hernia, varicose veins and hemorrhoids. None had conditions which conceivably might have disturbed the volume of blood. Fifty-six patients with cardiac disease were tested. They were divided into five groups (see Chart 1). Some patients were included in one group at one time and in a different group at the time of subsequent tests owing to changes in their status in the interim. Group I (17 patients) was made up of patients who never had had congestive heart failure; Group II (8 patients) of those who had had congestive failure but were in a compensated state at the time of the test; Group III (12 patients) those with left-sided failure manifested by pulmonary congestion; Group IV (25 patients) those with left and right ventricular failure; Group V (4 patients) those with primary pulmonary disease and right-sided failure.

RESULTS

Normal values were:

	Total cc.	cc. per kg. of body weight	Liters of blood per square meter of body area
Range	2500 - 6074	45.8 - 77.6	1.79 - 3.05
Mean ± standard deviation		65.5 ± 5.95	2.49 ± 0.28

In the patients with cardiac disease (see Chart 1), Group I, Group II, and Group III, the blood volumes were within the normal range; in Groups IV and V the majority had significantly elevated blood volumes. Statistical analysis showed data for Group I were highly significant (probability=0.01); Group II showed no significant difference from normal. Group III volumes were significantly lower than normal calculated as cubic centimeters per kilogram of body weight "wet"† (probability = 0.02) but almost the same when calculated at "dry" weight. Using liters of blood per square meter of body surface area, the volumes were below normal "wet" (probability = 0.03) but not significantly lower "dry" (probability = 0.3). Volumes of Group IV and V were significantly higher whether calculated as cubic centimeters per kilogram of body weight or L./Sq.M, "wet" or "dry" weight (probability = less than 0.01).

†"Dry weight" was the lowest weight reached after compensation was established.

DISCUSSION

Increased blood volumes occurred in the majority of persons having signs and symptoms of right ventricular failure, for example, venous engorgement, ascites and peripheral edema. In no case in which the patient had signs and symptoms of pulmonary congestion alone (due to left ventricular failure or mitral stenosis) was the blood volume elevated. However, there were five patients having the signs and symptoms of right ventricular failure who had blood volumes within the range of normal; when computed on "dry" weight only one of these was normal. The authors have no explanation for this finding.

Although not included with the results there were 16 patients who had serial blood volume studies during treatment for cardiac failure. As their peripheral edema, ascites and liver engorgement disappeared the blood volumes reverted toward normal values; the opposite was true in patients who became clinically worse. It was also noted that the increased volumes in patients with cor pulmonale reverted to the normal range as the signs and symptoms of right ventricular failure disappeared under therapy and that the total increases of the blood volume in these patients was not entirely due to secondary polycythemia.

The findings in the present study closely approximated those of Nylin and Hedlund[8] who also found hypervolemia most pronounced in patients with severe edema and slight in those with pulmonary congestion. In the present series the hypervolemia was roughly proportional to the amount of edema and excess body weight. Etiological factors (rheumatic heart disease, arteriosclerotic heart disease, hypertensive cardiovascular disease, etc.) had no apparent relation or effect on the blood volume in any given patient in any of the groups tested.

The chain of events in the evolution of cardiac failure has been a controversial subject. Probably the most generally accepted definition of cardiac failure is an insufficient output relative to the needs of the organism. Insufficient output of the left ventricle results in a relative state of anoxia; the organs such as the kidneys, liver and endocrine glands evoke reactions to retain salt and water. The exact hemodynamics in all the mechanisms is not known. Apparently at the stage of cardiac failure when only pulmonary congestion is present there is no hypervolemia, according to the results noted in the present study, even though these patients retain salt and water as shown by diuresis and weight loss following cardiac therapy. As Ross[11] pointed out, there may be a relative shift of the total blood volume to the pulmonary vascular bed without an overall blood volume increase in these patients with left ventricular failure alone. This may be explained by the relative unequality in the output of the two ventricles, the right ventricle ejecting more blood per beat than the left. Clinically, this theory has some support in that the pulmonary congestive signs and symptoms are relieved partially when the right ventricle fails. With the failure of the right ventricle there is the factor of less venous blood being passed to the pulmonary vascular bed with a greater volume of blood being pooled in the greater venous circulation. The authors feel that this venous pooling and congestion probably contributes greatly to the hypervolemia as well as to the hepatomegaly, ascites and peripheral edema. It is recognized that there are many factors that enter into the problem of cardiac failure and that this venous pooling may not be the main factor in any given patient.

By this method the whole blood volume of normal patients was determined to be 65.5 cc. $\pm$ 5.95 cc. per kilogram of body weight or 2.49 $\pm$ 0.28 liters per square meter of body surface. In a majority of a series of patients with heart disease hypervolemia was found during right ventricular failure but not in those having left ventricular failure or mitral stenosis alone.

Forty-second Avenue and Clement Street.

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The Changing Picture in Surgery of Pulmonary Tuberculosis

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• In a review of the operative treatment of 1,271 patients with pulmonary tuberculosis in an 11-year period, it was noted that, beginning with 1947, there was a great increase, relatively, in the number of cases in which pulmonary resection was carried out. In 1943, the first year of the period of study, there were six minor operative procedures to every four major operations; in 1953 the ratio was one minor to nine major. This reversal reflects the discoveries of antibiotics for conservative therapy on the one hand and the advances in surgical techniques for major operative treatment on the other.

Now that it is safer, resection will probably be used more and more—including bilateral resection in "salvage" cases. On the other hand, with specific antibiotics available, there is a tendency at present to treat conservatively for longer periods in cases in which, formerly, minor operative procedures would have been carried out early.

TO SEE IN WHAT WAYS the surgical treatment of pulmonary tuberculosis in recent years might reflect the general trend in treatment of the disease, which has been remarkably influenced by the pertinent antibacterial drugs, the authors reviewed their experience of the past 11 years in the operative treatment of 1,271 patients. It was hoped that the study might also give indication as to the direction surgical treatment might take in the immediate future.

The source of patients operated upon remained relatively constant, so that comparisons from year to year are valid. In the 11-year period of the study, 1,743 operations were performed upon 1,271 patients (Table 1). Eighty-one per cent (or 1,024) were patients treated in private practice who were referred from the Barlow Sanatorium or from medical colleagues in the vicinity. Nineteen per cent (or 247) were patients in the wards of two tax-supported hospitals.

SEX DISTRIBUTION

The ratio of female to male patients was a little more than six to four. That ratio remained fairly uniform over the period of study (Table 2) until the past year, when the proportion of males increased. The ratio was about the same for all types of operation with the exception that among patients who had resection the proportion of females was greater—about seven to three. Also, the female patients who had resection included a larger number with more extensive disease, so that among patients requiring pneumonectomy, female patients outnumbered males three to one. Conversely, in the group of patients needing the smallest amount of tissue resection (that is, segmental resection) the ratio of males to females was one to one.

TYPE OF OPERATION

In the eleven years covered by the study, pronounced changes took place in the type of operation performed (Table 3). In 1943 there were six minor procedures to every four major operations, but by 1953 the ratio was only one minor to nine major. Minor operations include phrenic nerve operations, severance of pleuropulmonary adhesions, rib resection for mixed tuberculous and pyogenic empyema and a few miscellaneous procedures. Major operations include the various extrapleural pneumonolytic procedures, pulmonary decortication, thoracoplasty and pulmonary resection.

PHRENIC NERVE OPERATIONS

In the year 1943, more patients had crushing of the phrenic nerve to produce paralysis of the diaphragm than any other operation (Table 3). As streptomycin and the other antibacterial drugs became available, and the use of pulmonary resection increased, crushing of the phrenic nerve was done in fewer and fewer cases. Other operations on the phrenic nerve, designed to produce a permanent diaphragmatic paralysis, have been abandoned.

Presented before the Section on General Surgery at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

TABLE 1.—*Extent of operation as related to sex of patients*

Procedure	Patients				Tabulated by operations			
	Male	Female		Total	Male	Female		Total
		No.	Pct.			No.	Pct.	
Minor	211	331	61	542	211	331	61	542
Major	270	459	63	729	454	747	62	1201
Total	481	790	62	1271*	665	1078	62	1743

*Private patients 1024 (80.7%). Public hospital patients 247 (19.3%).

TABLE 2.—*Ratio of male to female patients in 11-year period*

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	Total
Male	41	40	43	35	33	37	38	30	35	40	47	38
Female	59	60	57	65	67	63	62	70	65	60	53	62

TABLE 3.—*Changing trends in use of various operations over an 11-year period*

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	Total
Minor Operations:												
Phrenic nerve operation	42	36	36	39	33	23	26	13	7	4	5	264
Lysis and/or thoracoscopy	9	13	23	18	45	47	27	24	11	10	1	228
Rib resection	5	5	7	4	2	3	1	2	2	3	1	35
Miscellaneous	3	0	1	0	0	5	1	1	1	0	3	15
Total	59	54	67	61	80	78	55	40	21	17	10	542
Major Operations:												
Extrapleural lysis	1	1	2	0	1	2	0	7	2	3	0	19
Pulmonary decortication	0	0	0	0	0	1	4	1	0	5	2	13
Thoracoplasty	38	40	37	38	36	38	33	31	9	3	8	311
Pulmonary resection	0	5	6	16	29	29	39	40	64	78	80	386
Total	39	46	45	54	66	70	76	79	75	89	90	729
Total patients	98	100	112	115	146	148	131	119	96	106	100	1271

INTRAPLEURAL PNEUMONOLYSIS

Operations to sever pleuropulmonary adhesions and thus improve the effectiveness of artificial pneumothorax treatment were beginning to increase in 1943, as there was increasing acceptance of the dictum that pneumothorax complicated by adhesions should either be improved by the severance of adhesions or abandoned in favor of some other therapeutic procedure. Pneumonolysis and/or thoracoscopy operations increased steadily to a peak in 1948 (Table 3) and then rapidly declined almost to the vanishing point. This decline was not due to the abandonment of the belief that adhesions complicating artificial pneumothorax should be severed, but rather to the abandonment, by the authors' medical colleagues, of artificial pneumothorax as a treatment of pulmonary tuberculosis. The substitution of resection for pneumothorax was due, in a large measure, to the advent of the antibacterial drugs and the subsequent lowering of the risks of excisional operations; and in lesser degree it was owing to a growing feeling on the part of both physicians and patients against pneumothorax and its complications.

THORACOPLASTY

Eleven years ago thoracoplasty had reached a fairly stable position in the treatment of pulmonary tuberculosis. An operation performed usually in two or three stages, and tailored to the individual patient to produce the maximum collapse of the chest wall over the diseased area and still preserve the greatest possible function in the undiseased lung was the accepted goal. The number of patients upon whom the authors performed this operation remained remarkably constant over a period of six years from 1943 to 1949 (Table 3), but in 1949 the number of patients having excisional operation exceeded for the first time the number having thoracoplasty, and after that there was a rapid decline in thoracoplasty. (These data refer to thoracoplasty done as a therapeutic measure and exclude those done for space-reducing reasons with excisional operation.) This decline occurred in spite of the facts that the results of thoracoplasty were very good, and no one had clearly demonstrated that excisional operation would produce any greater improvement in the number of patients rehabilitated. But thoracoplasty is a deforming operation, even though the extent of the deformity can be kept to a minimum with proper postoperative care. Also it is, for most surgeons, a multi-stage operation. These two characteristics are of considerable importance in lessening the use of the operation.

TABLE 4.—*The effect of antibacterial drugs on mortality rates among patients surgically treated*

	No. of operations	Early Mortality No.	Early Mortality Pct.	Late Mortality No.	Late Mortality Pct.	Total Mortality No.	Total Mortality Pct.
No TB antibacterial drugs—to 1947	56	3	5.4	6	10.7	9	16.1
Short term drug therapy—1948-1951	172	7	4.1	4	2.3	11	6.4
Long term drug therapy—1952-1953	158	3	1.9	1	0.6	4	2.6
Total	386	13	3.4	11	2.8	24	6.2

TABLE 5.—*Changes in extent of pulmonary resection in an 11-year period*

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	Total
Less than one lobe	0	....	....	....	....	1	....	2	3	31	19	56
One lobe	0	1	1	3	4	9	15	20	39	32	34	158
One lobe plus segment	0	....	....	....	1	1	3	6	10	9	10	40
One lung	0	4	5	13	24	18	21	12	12	6	17	132
Total resections	0	5	6	16	29	29	39	40	64	78	80	386

TABLE 6.—*Resections compared to other surgical collapse procedures*

	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953
Pulmonary resections	0	5	6	16	29	29	39	40	64	78	80
Surgical collapse procedures	89	89	96	95	114	108	86	68	27	17	14

EXTRAPLEURAL PNEUMONOLYSIS

During the 11-year period of the present study the authors have made very little use of the various extrapleural pneumonolytic procedures that require the use of air or some other foreign body to maintain the pulmonary collapse obtained by the operation. The enthusiasm in some quarters for the newer polyethylene and other plastic preparations[5] as a plombage material has not appreciably altered the authors' dislike for the use of foreign bodies as an aid to pulmonary collapse.

MISCELLANEOUS OPERATIONS

While the number of cases of tuberculous empyema with mixed infection has decreased over the past decade, surgical drainage was required as a part of the treatment in a few cases in the present series. Other minor procedures, such as the drainage of abscesses of the wall of the chest, excision of tuberculous sinuses, et cetera, are still being done in limited numbers.

PULMONARY RESECTION

In 1943, although the authors performed pulmonary resection in 16 cases for other diseases, no tuberculous patients were so treated—this despite the fact that one of us (J.C.J.) was co-author of one of the first publications dealing with resection in the treatment of pulmonary tuberculosis.[2] But during the next four years, even though there was a high morbidity and mortality connected with the operation[1, 3, 4] an increasing number of resections was done (Table 3)—chiefly in patients in whom all other measures had failed, or who had so much tracheobronchial disease as to make them very poor candidates for other surgical measures. But by 1948 the antibacterial drugs effective against tuberculosis were available and had so reduced the hazards of excisional operation as to bring about a rapid increase in the use of this surgical therapeutic measure (Table 4). The number of patients having resection of lobes or parts of lobes rose particularly rapidly. While the authors have not shared the enthusiasm of some investigators for the resection of the very small residual foci remaining after long continued antibacterial treatment, there was an increase, in the last three years of the period covered, in the number of patients having resection of only one or two segments of a lobe and concomitantly a decline in the use of pneumothorax (Table 5).

DISCUSSION

When the number of patients having resection is compared with the number having all other surgical procedures (Table 6), it is noteworthy that the rapid increase in the number of pulmonary resections and the accompanying decrease in other surgical procedures which was so apparent between 1947 and 1951, both leveled off in 1952 and 1953. It would appear that the transition from the thoracoplasty-pneumothorax era to the pulmonary resection era has been completed and that some predictions may be hazarded regarding the operative treatment of pulmonary tuberculosis in the immediate future.

There will no doubt continue to be a few patients who, for one reason or another, will not be suitable candidates for pulmonary resection, and in whom phrenic nerve crush, thoracoplasty or the extrapleural pneumonolysis procedures with or without

plombage, will be done, either in preparation for, or in preference to, resection. Likewise, for many years there will continue to be a certain number of "salvage" patients in whom resection will be the only effective treatment. In this category may be included patients with residual pulmonary suppurative disease resulting from tuberculous bronchitis, patients in whom collapse therapy has failed to effect a cure, patients with disease previously controlled but again become active, and patients with such extensive pulmonary destruction that no other measure will be effective.

There will be increasing use of bilateral resection, or of resection combined with some other surgical measure in treating some of these "salvage" patients. In this respect, pulmonary or cardiopulmonary function studies made before and in the interval between multiple procedures will be of great help in selecting patients suitable for surgical intervention and in determining the type and amount of operation to be done. And there will be a certain number of patients who will continue to have tubercle bacilli in the sputum and/or x-ray evidence of cavitary disease after long-term antibacterial drug therapy, and for whom excisional operation is unquestionably indicated. The future treatment of small, residual caseous, caseofibrotic or upper lobe bronchiectatic disease, however, is quite uncertain. Undoubtedly there is a tendency at present away from the resection of such small lesions, and toward ever longer drug therapy. But whether that trend will continue or will be reversed will depend upon many things. Of great importance will be the results of careful, long term follow-up studies of both the excisional and the non-excisional groups of patients.

At present it would appear that the wisest course to follow is to study each patient, rather than to apply to his case a categorical list of indications for resection. Each patient should have the benefit of a careful appraisal by a team composed of internist, pathologist and surgeon before a decision is reached regarding a recommendation for surgical intervention.

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Office Treatment of Ambulatory Schizophrenics

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• There are many advantages of treating schizophrenic patients outside a hospital setting, if it can be managed. These advantages include the lesser pecuniary cost to the family and patient and the maintenance of the patient's self-esteem by his continued life in the community, particularly if he can be kept at some sort of gainful occupation. There is also a tendency for schizophrenic persons to increase their loss of contact with reality if, as in a hospital, they are taken care of and not expected to assume any responsibility for themselves.

The office treatment of a schizophrenic person entails special problems not only of therapy but of dealing with relatives and the community. It is felt that attention to these matters results in the successful social restoration of patients who formerly would have been thought too ill to remain outside a hospital setting.

Although this is among the most demanding work a psychiatrist can engage in, the rewards are great.

SCHIZOPHRENIA appears to be one of the major medical problems facing physicians in the United States. Psychotherapy of schizophrenic persons has increased considerably in the past ten to fifteen years, and since treatment of this kind has proven valuable in hospital settings, increasing attempts are being made to carry out psychotherapy for schizophrenic patients who are not hospitalized. It has come to be recognized that in many cases severe regressive phenomena can be prevented in psychotic persons if they can be kept out of the hospital. Especially if a patient can work and manifest some semblance of social living, his self-esteem is bolstered. There is a not unimportant financial aspect as well.

Probably no facet of psychiatric practice demands more of a therapist, in terms of ability and patience, than treatment of schizophrenic persons in an office, for he lacks the support of colleagues and staff that he has in a mental hospital; he bears heavy responsibility for a patient who may be, or may become, a danger to himself and to others; and, last but not least, he must withstand the anxious interference of relatives and occasionally of the community. Especially in regard to acting out, hostility, and unutterable demands by the patient, the therapist's inscrutability may undergo severe trial. Small wonder, then, that many psychiatrists regard the whole procedure of psychotherapy with ambulatory schizophrenic patients as an unlikely business, and all too readily become discouraged. Perhaps discouragement can be forfended, however, by consideration and discussion of some important practical matters that, if left unattended, may result in subsequent difficulty.

The first and foremost such matter is the therapist's awareness of whether or not he really wishes to undertake treatment of a given patient. If one has the opportunity to supervise the therapy of schizophrenics by others, he may discover that occasionally the venture is begun with unnoticed reluctance on the part of the therapist. There may be, for instance, evidence of a peculiar rigidity and the need to hold fast to a set schedule that cherishes the psychiatrist's time. Or there may be a coldness during unasked for phone calls by the patient and a need to make it overly clear to the patient that his "demands will not be met here."

Perhaps under pressure from the patient's family or from colleagues, and with an eye to the prestige value of "handling anything that comes along," the therapist may begin treatment when he is secretly reluctant to do so. The important thing in treatment of schizophrenic patients in the office is that the psychiatrist must be able to enter into an agreement with himself whereby he recognizes there will be unusual and unscheduled demands on his time and patience, and be disposed to pay the price. It is essential that the psychiatrist feel all arrangements, including the financial ones, are to his satisfaction before he undertakes treatment.

The therapist's evaluation of the patient's difficulties will naturally play a part in his decision as to whether to undertake treatment or not. However, evaluation of "how sick the patient is," of "ego strength" and such matters is highly speculative, especially in light of the present-day diagnostic scheme. The estimate is perhaps as much a matter of experience and empathy for the patient as anything else. Sometimes psychological tests may be helpful. An illustrative example occurred in the case of a 40-year-old man who was referred by an internist as having a problem in adjustment. The patient

Presented before the Section on Psychiatry and Neurology at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

had had a position that required a good deal of foreign travel, and apparently had symptoms as a result of "settling down." He was well dressed, intelligent and prepossessing; and although he answered questions readily, somehow he did not seem to be adequately communicative. After three interviews, there was still a question about the extent of the patient's difficulties and a Rorschach test was done. It revealed a rather well controlled psychogram, but the content seemed to indicate that the patient was psychotic with crumbling control. In the next interview, a more alert and active approach disclosed that the patient felt there was a microphone hidden in the room and had decided on its exact location.

Once it has been decided the patient is psychotic and that psychotherapy should be begun, a number of practical decisions arise.

The frequency of interviews requires careful thought. If the patient is one who is felt to require strong support, it might be decided to see him three or more times a week at the start. Such frequency may also curb harmful "acting out" and lessen suicidal risk. However, it is also an invitation for the patient to become overdependent on the therapist, and such involvement may require years to straighten out. If the therapist is prepared to do intensive long-term psychotherapy, the involvement may do no harm; if not, it may invite a disastrous outcome if the frequency of interviews is cut after an initial supportive period. For example, one patient was greatly concerned about the cost of treatment. Since she was being interviewed three times a week she was asked if she would feel less preoccupied with finances if she cut down to twice a week. This apparently simple, obvious suggestion brought about a week of extremely psychotic behavior. On another occasion she had come in for an extra appointment and it had been agreed that she would skip the next regular meeting. The night before the meeting that she was to miss, she had an extremely frightening dream in which she saw herself among a group of extremely sick patients in a mental hospital and all of them were being treated by the psychiatrist except herself. She felt utterly lost and alone, and was quite depressed for two days.

In general it is desirable for less experienced therapists to see patients once or perhaps twice a week; and if therapy is begun along more ambitious lines, it is necessary that the psychiatrist expect to maintain the pace for some while. Naturally, the patient's financial resources have to be determined before any decision as to frequency can be made.

Another practical matter is: Who else should be concerned in the treatment? Some patients are best dealt with if another physician serves as an administrator. The other physician is not only someone the patient can turn to when the therapist is absent, but can handle medication, deal with questions referable to the patient's job or family, and serve as someone the patient can use to let the therapist know indirectly how things are going.

Then, as to the family: Should they be brought into the treatment, used for history-taking purposes, given instructions as to behavior toward the patient, and kept *au courant* with what goes on in psychotherapy? This again is a matter worthy of thought. If the patient seems able to get along by himself, and especially if he is not financially dependent on his family, it may be expeditious to enforce the idea that this is his treatment and his alone. In these circumstances the patient may feel free to respond to the psychiatrist's confidence in him, and not to involve the therapist in the hatred toward the family. On the other hand, if the success of the treatment will depend on the family's humor, it is simply logical to become an exponent of tact and diplomacy. Should the possibility exist of getting a family member to talk things over with another therapist, it should be seized with alacrity. There is another point here that is often overlooked. The patient's illness has a certain utility as far as the interrelationships within his particular family are concerned. If he starts to get well, all sorts of surprising events may occur in those nearest and dearest to him. If, for example, the therapist has reason to believe that a psychotic husband is integrated in an intense mutually hostile and dependent relationship to his wife, provision must be made for disruptive changes in her as the patient improves. Occasionally, the psychiatrist must insist that the patient cannot undertake treatment unless the other person who is in significant relationship with the patient is also undergoing therapy. Failure to do so may, in extreme cases, lead to suicide, psychosis or severe psychosomatic disorders arising in the spouse or relative.

Another practical consideration concerns how treatment should commence. One might take an exhaustive history, let the patient "free associate," or attempt to discover the precipitating causes of the present difficulty. Here again, the principle of flexibility must apply. There seems little point to questioning the patient about his childhood if the present-day world is falling in ruins about him. A history is useful if it can be obtained with a minimum of inconvenience and anxiety, but perhaps too often a therapist feels a need to get something into the record that will protect him and will serve as a source of data for a letter to the referring physician. Many psychotic persons will state that in retrospect they recognize that they inadvertently stated the central problem of their illness in the first few interviews. In other words it is well to commence by listening and by asking simple questions that clarify the patient's present difficulties in living. If this can be done against a background of knowledge of his

past, the listening and questioning may be more meaningful.

A useful frame of reference to guide the therapist's activity is the realization that the patient has missed certain valuable experiences in the growing-up period and has lacked, therefore, the opportunity to consensually validate these experiences. He does not know the relief and joy that can occur in the chum relationship by finding out that the chum has had similar experiences. Certain of these "lacks" cannot be mentioned to the psychiatrist either because they are not apparent to the patient as hiatuses in his maturation or because he feels so foolish about them and so unique. Therefore the psychiatrist may have to guess on the basis of his own experience and knowledge of the culture in which we live in order to fill in the blanks for the patient. For example, a patient was walking downtown and was whistled at by a young woman who passed in a car. He had quite a striking reaction to the experience and walked back around the block to see if she was possibly interested in picking him up only to find that she had disappeared. The patient spoke of his frustration and uneasiness in relation to the incident and then there was a rather uncomfortable pause. The psychiatrist mentioned that it would not be unusual for masturbatory ideas to occur following such an exciting but frustrating incident; and the patient, very relieved, expressed agreement—and amazement that his feeling were by no means unique. Intervention of this kind is more than simply emotional support because it also aids the patient's maturation. He did not have a chance to discuss masturbation with his peers during his early adolescence.

There is another possible aid for the therapist in understanding experiences the patient is relating; namely, hearing what is said in terms of actual present-day experience and not initially as a projection. This is not to say that past experience is not coloring the present, nor that the patient is not reliving an old story so that he has gotten himself into the present situation because of the past, but it is to say that one's approach can be unacceptable to the patient if the reality of the present-day situation is not taken into account. Thus a young schizophrenic man was relating his concern and feeling of responsibility toward a girl he was dating. The therapist, rather than jumping at what he knew to be true—namely, that the patient had a tendency to feel overwhelmingly, responsible for women as a way of integrating with them—asked in what way the girl might be making the patient feel responsible. The patient confessed that the girl had a suicidal preoccupation and had pledged him to silence about it, but that bearing the responsibility made him uneasy. He broke into a real grin following the discussion and expressed gratitude that he was not treated as if he were simply putting ideas into a situation in which they did not belong. He described an experience that had happened on several occasions when he was hospitalized: A psychiatrist would urge him to talk, but then point out how unreal what he said was.

It is also useful in therapy if the therapist will make a practice of discussing dependence before hostility. The patient mentioned in the preceding paragraph had a serious problem because of his passive resistance to school work. Rather than taking it up simply as a "spite reaction," the therapist inquired into the patient's earliest school experiences. After some hours of work, it was established that the original reluctance toward school was related to a fear that his mother was going to leave when she sent him to school and that she would not be there when he got back. When he was at school there was such a horrible preoccupation with what might be going on at home that it became impossible for him to keep up with his fellows even though he was quite bright. The helplessness was in part controlled by seeing himself as spiteful, that is, powerful in some way.

Many of the difficulties and technical problems mentioned were encountered in a female patient who had been schizophrenic for a year before psychotherapy was undertaken. Just before she was observed by the author, she had fled from another city a great distance away under the impelling delusion that her life was in danger there. She was not hospitalized because she had three children and it was considered of great importance to her that she somehow continue to care for them. She had been a Cinderella all her life, and scullery work and caring for the children were an avocation as well as a culturally prescribed behavior. In addition, she had relatives in the area who would undertake some of the responsibility for looking after her. Psychotherapy was begun at a frequency of three times a week, and it was felt that if a strong rapport were established with her it might be possible to attack rather directly some of the processes responsible for her extreme guilt and suicidal urges, and at the same time to increase, if even slightly, the satisfactions in her daily living. The delusions, hallucinations and other evidences of psychotic thinking were rarely dealt with, since it was felt that a change in her living would result in the minimizing of the need to be psychotic. The exception to the above was that evidence of "craziness" in relation to the person of the therapist was dealt with firmly, often sarcastically and, on occasion, histrionically.

One of the sources of support that was deliberately exploited was the need of the children for her. They were no easy crew, in themselves, but her mastery of even simple practical problems in day to day living aided her Lilliputian self-esteem. When, for example, some months after therapy had begun, she

announced that she was shipping the children off to their father, since she was such a terrible mother, it was possible for the therapist to intervene with the fervent comment: "You'd really like to fix the so-and-so, wouldn't you?" Time does not permit further disclosure of events in this case. Suffice to say that the patient was of a type the author once would not have considered treatable outside a hospital setting.

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Discussion by **NORMAN Q. BRILL, M.D., Los Angeles**

Dr. Jackson has touched on an extremely important subject. The treatment of schizophrenics with psychotherapy outside a hospital setting is a relatively new development in medical practice. It was not too long ago that hospitalization was routine and treatment little more than custodial care. Primarily it is the increased understanding of the psychodynamics involved in the development of a schizophrenic reaction that has made possible the treatment of such patients on an outpatient basis. Bizarre behavior and delusions and hallucinations are no longer looked upon as being just "peculiar" but as important clues or indications of what has been going on in the patient's unconscious.

Dr. Jackson has quite properly emphasized the fact that severe regressive phenomena can be avoided through the use of treatment without hospitalization especially where hospitalization involves merely a goal of socialization of the patient without the development of any real insight into the nature and causes of his disorder. This reference to severity of disorder points up the need in any discussion of the treatment of schizophrenia to be specific about the kind of patient one has in mind. There must be some who, listening to Dr. Jackson's paper, wondered if he were referring to severely disturbed, noisy, hallucinated and often dangerous patients or to the relatively non-disturbed patient whose behavior is not too bizarre, who is perhaps somewhat confused or deluded but who to some extent is able to get along outside a hospital and in some instances even able to work. It is of interest that some of the early patients whom Freud treated in the early days of psychoanalysis would by present standards be called psychotic yet in those days were classified as suffering from neuroses. Dr. Jackson touched on the need to evaluate the patient's difficulties before undertaking treatment of him; but to insure against any misunderstanding a clinical description of suitable types of patients would be helpful. With some schizophrenics who are not too sick, outpatient treatment may be undertaken without the prospect of having unusual and unscheduled demands being made on the therapist. The schizophrenic who is sufficiently well motivated to seek continuing treatment usually has enough ego functioning to permit the interpretation of his oral strivings in lieu of having them satisfied by the therapist.

Dr. Jackson very properly points out that the therapist's evaluation of the patient's difficulties necessarily plays a part in his deciding about undertaking outpatient treatment. He properly emphasizes that the ability of the therapist to make such examinations is a matter of experience and understanding.

Dr. Jackson indicates that psychological tests may be helpful in determining a patient's suitability for outpatient treatment. In my experience this has been the exception rather than the rule. The experienced therapist is one who ordinarily can evaluate the degree of illness from the initial interviews. I have seen instances in which results of a Rorschach test were reported by a psychologist as being indicative of a schizophrenic process when clinically the patient was not schizophrenic. It is important to understand that the projective test reveals information about what is going on in the patient underneath the surface with ordinary defenses not operating. It may reveal a great deal of underlying psychopathology which the patient is able to keep under control—a fact which is important in itself and not to be minimized.

As with any other kind of patient, in treating a schizophrenic, it is necessary to define clearly the goal of treatment. Once decision has been made on supportive versus insight-producing therapy, the matter of frequency of visits is easily decided upon. It also serves to avoid changes in scheduling of visits which frequently result from shifting or unclear goals.

It is unfortunate that there is the problem of finances. Cutting visits down because the patient cannot afford so many visits leaves the psychiatrist open to criticism by the public as well as the medical profession. It should be possible to look into the patient's financial situation early in the treatment situation so that this may be considered from the start in outlining the goal of treatment. The therapist should be prepared to reduce his fee if the patient cannot afford to come as often as treatment demands just as readily as he offers to cut down on the number of visits.

Dr. Jackson has suggested that the therapist collaborate with another physician who serves as an administrator. I would wonder about the nature of this other physician and the extent of his training and understanding. In some psychiatric hospitals therapeutic functions are separated from administrative. For example, at Chestnut Lodge in Rockville, Maryland, each patient has a ward physician who takes care of such matters as passes, assignment of rooms, and other things which relate to the hospital. A therapist is assigned in addition. He makes no administrative decisions and merely deals with the patient and his emotional reactions. In both instances at Chestnut Lodge the physician is a psychiatrist, and I wonder if Dr. Jackson had in mind that "the other physician" who would serve as administrator be a psychiatrist too.

The problem of the family of the patient which Dr. Jackson has stressed is an important one. Frequently it is possible for the patient himself, rather

than the physician, to induce a member of the family to obtain treatment. It can come about by helping the patient to be objective about his family, to see that they have emotional problems too, like himself. Once the patient sees this, he himself is likely to insist that the member of the family he is most concerned with also get help. Usually the patient has been expecting his family to fulfill some impossible phantasy and been repeatedly disappointed, hurt and angry. When he learns that he cannot expect anything different he is likely to take a different tack. Experienced therapists, as Dr. Jackson has pointed out, realize the extent to which two people may adjust to each other through disturbed relationships and how a change in one through therapy will produce serious reverberations in the other. Many times the second member of the family will become upset and consult the patient's therapist, and it is at this point that the therapist can often suggest psychiatric help.

In the treatment of schizophrenics it is helpful to realize that the schizophrenic is angry and hostile and to varying degrees has withdrawn into a narcissistic shell—into an unreal world of fantasy to avoid being hurt and disappointed. The schizophrenic reaction is a defense. Because of it the patient has missed the ordinary experiences that others usually have, as Dr. Jackson pointed out. Another aspect to be remembered and to be used as a guide in treatment is the feeling of guilt that accompanies the patient's hostility. Also to be borne in mind is that the give-and-take experiences which the average individual encounters in the process of growing up, nourish and enlarge the ego. This is something that the schizophrenic has not had enough of either because of his own early withdrawal or because of repeated frustrations in his early attempts to give and take.

I would certainly subscribe to Dr. Jackson's emphasis on the need to deal first with upsetting reality situations; and I was particularly impressed, from the examples which he gave, of his intuitive ability to sense the presence of such situations in his patients. With regard to the point of discussing dependence before hostility, I would suggest the following: Usually they go together. If dependence is pointed out before hostility, it may be interpreted as criticism. In my experience it has been helpful to recognize the hostility first and its relationship to the patient's dependent needs, which then can in turn be related to the underlying fear which perpetuates it.

To the extent that one encourages patients to seek greater satisfactions in daily living and also tries to bring about environmental changes for the patient, one is playing the role of a parent. Positive attachments which may develop cannot then be totally explained as transference, nor can the negative feelings which inevitably develop later on. The patient who has been carefully induced into giving up a psychotic reaction, not infrequently will regress all the way as a result of some unexpected frustration at the hands of the therapist which is interpreted by the patient as rejection. Like a small child, the patient projects his own hostility onto the therapist, and it is the resolution of this basic problem that is perhaps the most difficult task to achieve in treating such patients.

Use of Radioactive Chromic Phosphate in Pleural Effusions

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• Radioactive chromic phosphate was chosen in place of radioactive gold for control of pleural effusions and ascites.

The chromic phosphate has no gamma radiation to complicate the health physics. Its 14.3 day half-life in contrast to that of 2.69 days for gold makes possible the use of much smaller total dosages. There were no untoward results from the use of this material. The results in the series here reported upon compare favorably with those reported for gold^{198}.

THERE ARE FEW CONDITIONS resulting from neoplastic processes that cause so much discomfort to the patient as the formation of pleural effusions and ascites. Often in the treatment of malignant disease, the relief of pain and discomfort is the best that can be achieved. Any new material or method that helps to do this is a valuable addition.

Radioactive chromic phosphate is a new material that is used to control effusions and ascites in the same fashion as is radioactive colloidal gold. The results with chromic phosphate are comparable to those with gold. The chromic phosphate has some advantages over gold, and a few disadvantages.

Radioactive gold for the control of ascites was first used by Muller, who reported his first work with it in 1949.[7] He had first used a radioactive isotope for this purpose in 1945. At that time he employed Zn_{63} (cyclotron prepared).[8]

In 1953, Seaman, Sherman and Bonebrake[11] reviewed the several reports that had appeared by then and found that favorable results varied from 30 per cent to 90 per cent in cases of malignant effusion in which radioactive gold was used. In their own series, 50 per cent of the patients treated had some measure of palliation. It is evident from these figures that the gold has value as an agent for palliation.

Since most (90 per cent) of the ionizing radiation from Au_{198} is due to the beta particles emitted, the gamma component only complicates the safety factors. The dosage scale for gold runs from 25 to 100 millicuries instilled into the pleural space, and 50 to 200 millicuries into the peritoneal cavity, at one administration. The equipment used for instillation is shown in Figure 1. The equipment and protection required, although not too complex or difficult, becomes much simpler when radioactive chromic phosphate is employed (Figure 2).

The dosage range for chromic phosphate runs between 6 and 9 millicuries for pleural effusions and between 9 and 12 millicuries for ascites.

The radioactivity of gold^{198} consists of an effective beta particle of 0.98 microvolts which has a maximum range of 3.8 mm. and a half path* of approximately 0.4 mm. in tissue, plus a gamma ray of 0.41 microvolts. After the injection, the patient becomes a source of radiation. It has been calculated that when 100 millicuries is placed in a peritoneal cavity, there is emitted from the patient 50 milliroentgens per hour at a distance of five feet. It is necessary, therefore, to keep such a patient at least six feet from other patients in order to stay within the maximum permissible daily radiation exposure; and a nurse, for example, may be within two feet of the patient for no more than 20 minutes each day.[2, 9]

The ionizing effect of radioactive chromic phosphate is due to the beta rays of P^{32} which have a maximum energy of 1.712 million electron volts. The energies of the beta rays average approximately 600,000 electron volts, but energies as high as 1,800,000 electron volts have been reported. In animal tissues, the beta ray has an average penetration of 2 mm. with a maximum of 7 mm. reported. The properties of and methods of preparation for the radioactive chromic phosphate are given herewith:

(a) Average particle size is 4 microns, with a range of 0.5 to 10 microns.

(b) The chromic phosphate is prepared to contain 1.0 millicuries P^{32} per ml. in sterile and pyrogen-free saline solution. The preparation contains approximately 3.5 mg. inert chromic phosphate (or 0.77 mg. P^{31}) per millicurie of radioactive phosphorus. Administration of 8 millicuries P^{32} is therefore also associated with the injection of 28 mg. of $CrPO_4$, or less than 0.5 mg. of $CrPO_4$ per kilogram of body weight. No toxic effects have ever been reported for the inactive chemical and the author would estimate the safety index to be in excess of 100. The method of preparation is as follows: To

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Presented before the Section on Radiology at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

*Half the distance that a beta particle would penetrate in tissue before loss of all its energy.

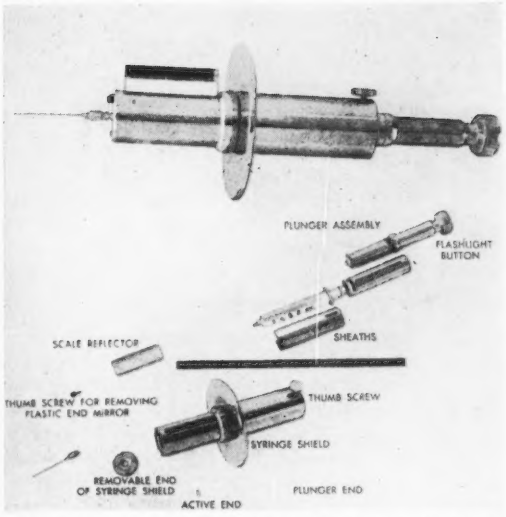

Figure 1.—Equipment used for instillation of gold[198].

Figure 2.—Equipment needed for injection of radioactive chromic phosphate. The receptacle at lower left is a lead-lined glass bottle into which the bottle of chromic phosphate is placed.

the colloidal suspension of radioactive chromic phosphate is prepared by adding an equimolecular amount of chromic nitrate to radioactive phosphorus containing phosphoric acid carrier. The solution is evaporated to dryness and heated to 550° C. Pyrogen-free saline solution and pyrex glass beads are added and the preparation sterilized. The particles are reduced in size by shaking for 24 to 36 hours and the material is resterilized.[5, 6]

(c) Amorphous chromic phosphate is insoluble and appears to be biochemically inert. It therefore remains in situ, except for mechanical transport.

TABLE 1.—*Proportion of dose of P^{32} eliminated in urine and feces, as reported by Neukomm and co-workers[10]*

Number of days after injection	Percent of dose in urine and feces
5	0.36
12	0.11
19	0.05
26	0.04

The evidence to date indicates that such relocation takes place to a minor degree only, even with particles of less than one micron.[3]

The biological fate of the radioactive chromic phosphate has not been determined in all its phases.

Neukomm and co-workers[10] noted that when intratumoral injections of this material were used in the treatment of spontaneous mammary cancer in rats, part of the P^{32} was eliminated in the urine and feces in the proportions shown in Table 1.

It was assumed then that radioactive chromic phosphate, being insoluble and possessing only a beta component, could be used to treat serous effusions in the same manner as radioactive gold. Since the chromic phosphate had no gamma component, the need to protect personnel and patients from gamma radiation would be obviated and handling of the material and health physics would be simplified.

In the present series of cases, no quantitative determinations of uptake in the reticuloendothelial system were done. Nor were excretion studies carried out. However, no untoward effects or undesirable systemic effects were noted from the instillation of as much as 16 millicuries of radioactive chromic phosphate. The authors do not have proof that the material remains in situ, but the observations certainly suggest that it does, and that the ionizing effect is spent where the material comes into immediate contact with tumor cells in fluid and on exposed surfaces.

The technique employed for injection of radioactive chromic phosphate into the pleural space is as follows:

Thoracentesis is done and as much of the free fluid present as it is possible to remove is withdrawn. The suction apparatus is then detached from the needle and all equipment and drapes are removed from the field. The bottle containing the radioactive material is thoroughly shaken to obtain a uniform distribution of the particles. The bottle contains multiple small glass beads to facilitate this. The rubber stopper is cleaned with alcohol and the material is aspirated into a 10 cc. syringe. The syringe is detached from the aspirating needle and inserted into a thoracentesis needle and injection made into the free pleural space. Then the needle and syringe are withdrawn. The area is covered with 2 x 2 or 4 x 4 gauze pad and fastened with adhesive tape. The needle, barrel and plunger are separated and

wrapped in gauze and placed in a bag marked "contaminated." All contaminated linens are placed in bags and so marked, as are the rubber gloves worn by the physician throughout the procedure. The physician's hands are monitored for evidence of contamination. If activity is present on the hands, they are thoroughly and repeatedly washed in a detergent solution. All contaminated equipment and linen are removed to the "hot" laboratory where syringes and gloves are washed and then stored with the linens until the radioactive contamination has been spent and monitoring proves them "cold." This requires six to eight weeks, after which they may be returned to general use. Disposable materials are stored in a large can kept in an isolated area until sufficient time has elapsed for radioactive decay; then they may be burned.

The technique for instillation of the material into the abdominal cavity is essentially similar to that used for the chest, except that in some cases the material is diluted up to a volume of 50 or 100 cc. and instilled through polyethylene tubing with an outside dimension of 0.47 mm. The end of the tubing, which is perforated, is inserted into the peritoneal cavity through a No. 13 needle. Approximately 8 inches of the perforated end is passed into the abdomen. It is hoped by this means to obtain a better distribution of the radioactive material and to prevent pocketing.

From the foregoing it is evident that the chromic phosphate is simpler to use than Au^{198}. The danger to personnel and patients is lessened by the absence of a gamma component and by the smaller dosage requirements.

The means whereby the formation of fluid is suppressed is probably explained by the work of Goldie and co-workers.[4] They proved that intracavitary injections of radioactive gold have a lethal effect on free floating cells of sarcoma (S-37 and S-180). And the group at the Oak Ridge Institute for Nuclear Studies[1] noted that the presence of gold in serous cavities resulted in the disappearance of tumor cells from the fluid.

At the City of Hope, 25 cases of pleural effusion and 12 cases of ascites were treated.

The work was started in November 1952 and is continuing. Of the 25 cases of pleural effusion 17 were due to primary pulmonary neoplasms and eight were due to metastasis from primary lesions located outside the chest. Four of these were primary breast cancer, one testicular neoplasm, one kidney tumor, one rectal carcinoma and one ovarian carcinoma with both pleural effusion and ascites.

The results in the cases of pleural effusion are shown in Table 2.

The seven cases in which the treatment was ineffective included one in which there was both pleural effusion and ascites from an ovarian carcinoma. The ascites was controlled for a period of ten months by two instillations of chromic phosphate of 5 millicuries each given two months apart. Also included was one patient who had had pneumonectomy one week before instillation of 8 millicuries of radioactive chromic phosphate into the chest. Large mediastinal nodes were present and an effusion developed. Two weeks after the material was placed in the chest, a bronchopleural fistula developed. The health physics complications arising therefrom were numerous.

TABLE 2.—*Pleural effusions—Results of treatment*

Total number of patients treated	25	
Fluid controlled—		
1 month	4	
2 months	4	
3 months	5	
4 months	1	
6 months	2	
12 months	1	
15 months	1	
Failures		7 (28%)

TABLE 3.—*Ascites—Results of treatment*

Total number of patients treated	12	
Free of fluid—		
1 month	4	
2 months	2	
3 months	1	
4 months	1	
10 months	1	
Failures		3 (25%)

In the 12 cases of ascites treated, the cause of the condition was ovarian carcinoma in nine cases, and in one case of each primary breast carcinoma, carcinoma of the head of the pancreas and carcinomatosis of unknown origin. The results of treatment are shown in Table 3.

REPORTS OF TYPICAL CASES

Following are brief reports of typical cases:

CASE 1. A man 50 years of age had thoracotomy on November 24, 1953. One thousand cubic centimeters of clear yellow fluid was present and large hilar nodes were noted. A 6 cm. mass was present in the lingula of the left lung, which was adherent to the pericardium. A specimen was taken from the mass and the tissue removed was anaplastic epidermoid carcinoma. As the lesion was felt to be inoperable the chest was closed. On November 30, 1953, 9 millicuries of radioactive chromic phosphate was placed in the left side of the chest. About 300 cc. of fluid was present at the time. The patient remained comfortable and free of fluid until early in

February 1954. He was readmitted on February 12, 1954. Eight hundred cubic centimeters of clear fluid was aspirated from the left side of the chest and 8 millicuries of radioactive chromic phosphate was placed in the left pleural space. Fluid did not form thereafter.

CASE 2. A 58-year-old woman had a carcinoma of the breast removed in November 1951. In November 1952, left pleural effusion developed. Tumor cells were found in the effused fluid. On December 5, 1952, 8 millicuries of radioactive chromic phosphate was placed in the left chest cavity. The patient remained comfortable until July 1953, when fluid reaccumulated. She was then lost to follow-up and it was learned that she died on January 16, 1954.

CASE 3. A woman 57 years of age had laparotomy in March 1950 and bilateral ovarian carcinoma with peritoneal implants was observed. Postoperative radiation was administered. In February 1952 ascites developed, for which 5 millicuries of radioactive chromic phosphate was instilled into the peritoneal cavity. This was repeated in February 1953 for recurrence. The patient remained free of ascites until she died in December 1953. In November 1953, a pleural effusion developed, for which 8 millicuries of radioactive chromic phosphate was placed in the chest. Fluid recurred in the chest before the patient died.

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ACKNOWLEDGEMENTS

This work was made possible by the cooperation of Dr. Alfred Goldman and the Service of Cardiac and Thoracic Surgery of the Medical Center.

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Recent Advances in Retrolental Fibroplasia

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• *Retrolental fibroplasia is the most common cause of preschool blindness. Changes identical to retrolental fibroplasia in humans have been produced in animals by exposing them to high oxygen concentration.*

Oxygen should be ordered for premature infants in a careful and precise manner. Concentrations of over 40 per cent should be avoided whenever possible. Withdrawal to air should be a gradual process.

THE SUBJECT OF RETROLENTAL FIBROPLASIA has gone through many stages of confusion since it was first described by Terry[29-34] in 1942. The work of Reese[19-23] and Owens and Owens[13, 14, 15] in particular did much to clarify the picture. As a result of their work a new classification based on a better understanding of the disease can be presented. The following classification was proposed by the Joint Committee on Retrolental Fibroplasia.[10] This classification comprises two main divisions: (1) the *acute* and (2) the *cicatricial* phase, or the phase in which there is no further active progression and in which scarring is the predominant feature. In turn each of these divisions is subdivided into five categories.

Stages of Retrolental Fibroplasia in the Active Phase:

STAGE I.—*Dilatation and tortuosity of retinal vessels.* Hemorrhages may or may not be present. Early neovascularization especially in the extreme periphery of the visible fundus may be present.

STAGE II.—*Stage I plus neovascularization and some peripheral retinal clouding.* Hemorrhages are usually present. Vitreous clouding may or may not be present. Spontaneous regression may occur.

STAGE III.—*Stage II plus retinal detachment in the periphery of the fundus.* Spontaneous regression unlikely.

STAGE IV.—*Hemispheric or circumferential retinal detachment.* Elevation of the retina over a large area, but still with some retina in position.

STAGE V.—Complete retinal detachment.

Grades of Retrolental Fibroplasia in the Cicatricial Phase:

GRADE I.—*Small mass of opaque tissue in periphery of the fundus without visible retinal detachment.* The fundus may have a pale appearance. The blood vessels may be attenuated.

GRADE II.—*Larger mass of opaque tissue in periphery of the fundus with some localized retinal detachment.* The disc is distorted by traction toward the side of the tissue, which is usually temporally. Cases ending in Grade I or II have useful vision.

GRADE III.—Larger mass of opaque tissue in periphery incorporating a retinal fold which extends to the disc. Visual acuity varies from 5/200 to 20/50.

GRADE IV.—*Retrolental tissue covering part of pupillary area.* Small area of attached retina may still be visible or only a red reflex over a sector of the fundus may be seen.

GRADE V.—*Retrolental tissue covering entire pupillary area.* No fundus reflex present.

In clinical and experimental fields, medical researchers persevere in attempting to determine the cause of retrolental fibroplasia and to seek adequate measures for preventing it. However, it remains one of the most challenging problems in ophthalmology today. Seventy per cent of the blindness in 500 preschool children in California is owing to retrolental fibroplasia. The fact that in 50 per cent to 75 per cent of cases[16] regression occurs spontaneously makes evaluation of treatment especially difficult. Recent research still implicates retinal anoxia owing to excessive oxygen or to other causes as the most probable etiological factor.

As early as 1949, Kinsey and Zacharias[11] showed that there might be a significant correlation between retrolental fibroplasia and the giving of oxygen.

Two years later, Campbell[3] of Australia published an article advancing the theory that retrolental fibroplasia might be due to the toxic effect of excessive oxygen. Her investigation covered the years 1948, 1949, 1950, and the results published deal with 181 surviving premature infants who at birth weighed from 1 pound 7 ounces to 3 pounds 8 ounces. There were 27 cases of retrolental fibroplasia. Campbell noted that of 123 infants given high-oxygen therapy 23 cases in 123 (oxygen given prophylactically as well as for cyanosis) 23 or 18.7 per cent had retrolental fibroplasia, whereas in the moderate-oxygen group the incidence was four cases in 58 infants (7 per cent).

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This study was made possible by funds from the Clara Heller donation.

Presented before the Section on Eye, Ear, Nose and Throat at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

Other investigators in various parts of the world carried on like experiments and reported similar results. Ryan,[25] also of Australia, wrote a paper supporting Campbell's observations.

Crosse and Evans[4] of Birmingham, England, also expressed the opinion that the real source of this disease lies in the more widespread and prolonged use of a high concentration of oxygen in the early life of premature infants of low birth weight—4 pounds or less. In support of this theory they traced the history and course of the disease in England.

A careful statistical study by Patz, Hoeck and De La Cruz[17] of Washington, D. C., published in September 1952 also pointed to high oxygen tension as a cause of retrolental fibroplasia. The study was done at Gallinger Municipal Hospital and all babies weighing under 3.5 pounds were placed in one of two groups in the nursery.

Group I comprised babies maintained in high oxygen (65 per cent to 70 per cent) for four to seven weeks. Group II included those who received lower oxygen (under 40 per cent) concentrations. The nursery routine was otherwise identical. The results of the study of 65 cases are shown in Table 1.

Goldman and Tobler[6] considered high and prolonged oxygen concentration important factors in retrolental fibroplasia. Locke[12] said that the disease is directly related to hyperoxia rather than to any secondary anoxia induced by oxygen withdrawal.

Perhaps no one has made a more comprehensive study of this mysterious disease than Szewczyk[26] who came out with the thesis that anoxia plays a major role in causing it and who strongly emphasized rapid withdrawal from high oxygen concentration as a very important causative factor. He first published a preliminary report of his findings in December 1951. In a later report[27] he cited the following preventive measures:

Premature infants weighing over 4 pounds and showing no sign of anoxia are not placed in oxygen. The fundi of the eyes are carefully watched and if signs of anoxia retinopathy develop, the babies are placed in incubators at a relatively low concentration of oxygen (40 to 45 per cent).

Premature infants weighing under 4 pounds are placed in an oxygen atmosphere of about 45 per cent or lower if possible. If signs of progression appear, they are returned to an oxygen concentration of 45 per cent.

From his observations, Szewczyk[28] deduced the theory of "relative hypoxia" as the etiological factor for retrolental fibroplasia and he offered the term *hypoxic retinopathy* as preferable to *retrolental fibroplasia.*

The work of Ingalls, Tedeschi, and Halpern[9] gave support to the theory of anoxia as a causative factor; they observed that anoxia in a pregnant mouse is capable of producing malformations in the eye of the offspring.

TABLE 1.—*Relation of retrolental fibroplasia to degree of oxygen concentration used for premature infants*[10]

Oxygen levels	High	Low
Total number of infants	28	37
Normal eye grounds	11	31
Retrolental fibroplasia stages:		
I.	3	4
II.	7	2
III.	2	0
IV.	5	0
Per cent with disease	53.5	16.2

Bedrossian, Carmichael and Ritter,[2] who reported clinical studies and further observations made at the Philadelphia General Hospital, stressed the point that many apparently conflicting observations are only variants of similar processes and not contradictory at all. They concluded: "Retinopathy of prematurity is an anoxic disease rather than an oxygen-toxic one. Although the excessive use of oxygen supplements predisposes to the disease, it is usually the rapid withdrawal of these supplements that precipitates the appearance of retinal changes."

Investigators are also weighing carefully the effects of high electrolyte diet with repeated blood transfusions and considering the possibility of a correlation between them and retrolental fibroplasia. Hepner and Krause[8] gave especial attention to this phase of the subject and concluded that these two factors (high electrolyte diet and repeated blood transfusions) may overload the capacity for physiological adjustment of small premature infants and lead to retrolental fibroplasia. Bedrossian and coworkers expressed the belief that blood transfusions have little or no effect on the disease.

An important recent contribution is the production of retrolental fibroplasia experimentally, as reported from various medical centers.

In November 1952, Gyllensten and Hellstrom[7] exposed newborn mice to oxygen intermittently. Litters of full term newborn mice with their mothers were protected from oxygen poisoning by withdrawing them from this high concentration after 48 hours and leaving them in normal atmosphere for 24 hours; then returning them again to the oxygen. This intermittent exposure to oxygen was continued for from one to three weeks, after which a microscopic examination was made. Of 50 mice so treated, about one-third had definite pathological changes. The most consistent findings were hemorrhages, retinal folding and formation of a vascular, cellular and fibrous tissue in the vitreous body.

Patz[18] and co-workers produced retrolental fibroplasia in numerous experimental animals—newborn rats, mice, kittens and puppies—by exposing them to 70 to 80 per cent oxygen concentrations. In pathological specimens they observed changes identical

to those of the early stages of retrolental fibroplasia in humans,[5, 24] that is, early endothelial proliferation in the nerve fiber layer of the retina and the later changes in retrolental fibroplasia.

It has been found that newborn kittens are the best laboratory animals for these experiments. In cats the retinal vessels begin to develop from the disc by a vascular budding process between the 35th and 45th day of intrauterine life; but the blood vessels do not reach the periphery of the retina until three weeks after birth. In humans the retinal blood vessels are fully developed at birth. Therefore, in kittens the situation is ideal for experimental studies because the degree of retinal vascularization in the first three weeks of the kitten's life is very similar to the retinal vascular development in premature infants.

Ashton[1] and co-workers placed newborn kittens and mother cats in 80 per cent oxygen for six to seven days and observed that high concentration of oxygen (60 to 80 per cent) caused a vascular obliteration of the retinal blood vessels in the developing retina of the kittens. When the animals were transferred to air, abnormal vascular proliferation and retinal detachment, much like the conditions observed in fibroplasia, occurred.

Since November 1950 every premature infant weighing under 2,500 grams born at the University of California Hospital, San Francisco, is examined with special regard to the question of retrolental fibroplasia. Pertinent data are given in Table 2.

The total of 165 premature infants born at the University of California Hospital since November 1950 is so small that no important statistical evaluation can be made. However, it is of interest to note that all premature infants in whom retrolental fibroplasia developed were kept under high oxygen concentration and that since this concentration has been lowered the percentage has dropped. Actually there has not been a case of retrolental fibroplasia since April 28, 1953, but very few small babies have been born at the hospital in that time. Since November 1953 only one premature baby weighing under 1,590 gm. was born at the University of California Hospital. Since January 1954 premature babies have received less than 40 per cent oxygen concentration at the hospital, and the record is being carefully recorded every eight hours by a Beckman analyzer.

The solution of retrolental fibroplasia requires close cooperation between obstetrician, pediatrician and ophthalmologist. Accurate records should be kept by all and the uniform data correlated.

No single institution has data on enough cases to give reliable statistical information. Therefore, a cooperative clinical study of retrolental fibroplasia must be made. It was recognition of this fact that led to organization for cooperative study on a national basis. The first factor to be tested in this nationwide research program was to be the role of oxygen as an etiologic factor. Results are not yet forthcoming.

In the meantime the California State Department of Public Health, with Dr. A. E. Maumenee, Jr., as chairman, has undertaken a cooperative clinical study of retrolental fibroplasia, the plan being to examine all premature infants under 1,500 grams, in certain designated hospitals, keeping careful obstet-

TABLE 2.—*Data on 165 premature infants relative to problem of retrolental fibroplasia*

	Period 1950-1951	1951-1952	1952-1953
Infants with birth weight under 2500 gm. (total number)	61	60	44
Normal	56	54	42
Retrolental fibroplasia	5	6	2
Per cent	8	10	4
Active phase:			
I	1	....	....
II	2	....	....
III	....	1	1
IV	....	....	....
V	2	5	1‡
Cicatricial phase:			
I	....	....	1
V	2*	5†	1§

*One baby had one eye Grade III.
†One baby had one eye Grade I.
‡One eye Stage I.
§Grade I. One eye regressed.

	Period 1950-1951	1951-1952	1952-1953
Infants with birth weight under 2041 gm. (total number)	24	19	13
Normal	19	13	11
Retrolental fibroplasia	5	6	2
Per cent	16	31	15

	Period 1950-1951	1951-1952	1952-1953
Infants with birth weight under 1590 gm. (total number)	3	4	4
Normal	3	0	2
Retrolental fibroplasia	0	4	2
Per cent	0	100	50

	Period 1950-1951	1951-1952	1952-1953
Infants with birth weight under 1370 gm. (total number)	1	2	4
Normal	1	0	2
Retrolental fibroplasia	0	2	2
Per cent	0	100	50

Babies that developed retrolental fibroplasia

Birth date	Case No.	Sex	Weight Grams	Pounds	Ounces
March 1, 1951	1 A*	M	1960	4	5
	1 B*	M	1850	4	1
March 2, 1951	2	M	1850	4	1
April 16, 1951	3	F	1540	3	6
June 18, 1951	4	F	2300	5	1
Jan. 18, 1952	5 A*	M	1830	4	½
	5 B*	M	1720	3	12½
April 9, 1952	6	F	1525	3	5¾
Oct. 13, 1952	7 A*	M	1060	2	5
	7 B*	F	1070	2	5
Nov. 7, 1952	8†	M	1510	3	5
Nov. 23, 1952	9	F	1290	2	13½
April 28, 1953	10	F	1340	2	15½

*Twins.
†Twin.

rical, pediatric and ophthalmological records. These reports will then be sent to the Department of Public Health where a statistician will compile the results. The purpose of this plan is to observe and record everything that happens to the infants, in hope that the analyses of these data will give clues to the cause of retrolental fibroplasia. Such plans, national and state, if carefully carried out, should aid materially not only in evaluating the effects of different oxygen concentrations but also in searching for a possible correlation between oxygen and some other contributing factor or factors or basic processes as yet unknown. While there is a generalized aversion to filling out forms, it would seem that the importance of complying with the request of the State Department of Public Health cannot be overemphasized. It is only by the cooperation of everyone in this matter that essential data can be obtained.

Meanwhile, there are two main considerations that should be kept in mind.

First and most important, high oxygen concentrations appear to be injurious and this is probably the main cause of retrolental fibroplasia.

Second, the withdrawal of tiny premature infants from the concentration of oxygen to normal air should be a gradual process.

In light of present knowledge it would seem that certain procedures are indicated in the care of premature infants: (1) Oxygen should be ordered in a very careful and precise manner, the order being written in terms of concentration rather than liter flow rate. (2) Whenever possible oxygen concentrations of over 40 per cent should be avoided. (3) In order that this concentration be accurately measured, an oxygen analyzer should be provided as standard equipment for every premature nursery with nursery personnel trained in the use of the analyzer and with standing orders that samplings be taken every eight hours.

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Parkinsonism

Early Results of Occlusion of the Anterior Choroidal Artery

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• Occlusion of the anterior choroidal artery was carried out in four cases for relief of Parkinsonism. Results were disappointing but there was temporary cessation of tremor in three cases and sustained alleviation of rigidity in two cases.

The causes of these changes following operation are unknown.

IN 1817 DR. JAMES PARKINSON[7] optimistically stated, "There appears to be sufficient reason for hoping that some remedial process may ere long be discovered by which, at least, the progress of the disease may be stopped." And yet 137 years later it is obvious that this status has not been achieved either by medical or surgical means. Sir Victor Horsley[5, 6] introduced the first surgical procedure for Parkinsonism in 1890 and published his final studies in 1909. The cortical excision of the motor area and subsequent modifications of the operation have for the most part been unsatisfactory because of the resultant spastic hemiplegia or hemiparesis following section or removal of some part of the so-called "pyramidal system."

In April 1953 Cooper[3] reported dramatic amelioration of Parkinsonism by ligation of the anterior choroidal artery in two severely advanced cases. The following August,[4] in a brief report of six cases, he described "striking alleviation of Parkinsonian tremor at rest," and added that "the procedure has been invariably followed by disappearance of most of the rigidity and cogwheelism from the contralateral extremities." Hemiplegia or hemianesthesia did not occur.

A brief review of the blood supply of the anterior choroidal artery, as outlined by Abbie[1] in 1936, and by Alexander[2] in 1942, might be of interest. The artery, which has been called the "pallidohippocampocapsular artery,"[2] supplies some of the areas affected pathologically by Parkinson's disease of idiopathic, arteriosclerotic, or postencephalitic type. In general the following areas of the brain are irrigated: (1) the globus pallidus, (2) the ventral part of the posterior limb and the retrolenticular portion of the internal capsule, (3) the middle third of the basis pedunculi and superficial adjacent portions of the dorsal thalamus and subthalamus, (4) the hippocampal formation and surrounding structures, (5) portions of the optic tract and lateral geniculate body and (6) the choroid plexus of the lateral ventricle.

The present communication is a preliminary report of experience with four cases in which surgical occlusion of the anterior choroidal artery was done. The operative procedure was performed bilaterally in one case and unilaterally in three. There were no immediate postoperative fatalities. One patient, however, died of tuberculous pneumonia six weeks postoperatively. The operative technique was similar in all instances. Temporal craniotomy was performed opposite to the affected side of the body. After the temporal lobe was elevated intradurally and the interpeduncular cistern was opened, the anterior choroidal artery was identified arising from the internal carotid artery above the posterior communicating artery. Silver clips were placed upon the anterior choroidal artery just distal to its origin. In addition, the arteries were coagulated, except in the first case.

REPORTS OF CASES

CASE 1. The patient was a 59-year-old right-handed man with postencephalitic Parkinson's syndrome of 24 years' duration, demonstrated in preoperative neurological examinations. There were severe alternating tremors in the upper extremities, generalized rigidity, cogwheel phenomena and other signs of advanced Parkinsonism. The patient was unable to walk and barely able to stand with support. After occlusion of the right anterior choroidal artery on November 24, 1953, no discernible change of the neurologic picture occurred except with regard to symptoms of paralysis agitans.

During the first three postoperative days the tremor on the left was periodically absent and, when

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Presented before the Section on Psychiatry and Neurology at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

present, was strikingly reduced compared to that on the right. The tremor of the left hand gradually returned to its preoperative magnitude, although at times it would be totally absent. The alternating tremor of the right hand continued unchanged postoperatively. The rigidity, cogwheel phenomena, posture, drooling, and other associated symptoms apparently were not influenced by the surgical procedure. The tremor was severe bilaterally during the two weeks of terminal illness, except for brief periods when it decreased on the left side. The patient died of tuberculous pneumonia.

Upon postmortem examination it was noted that the silver clip mechanically occluding the right anterior choroidal artery was in place. The only gross change noted apparently due to the procedure was some cerebral swelling, particularly in the region of the pallidum; in addition there was a small area of contusion over the inferior surface of the right temporal lobe probably due to operative exposure. There was no other gross softening of cerebral tissue. The substantia nigra showed bilateral symmetrical degeneration which apparently was a result of the disease process.

CASE 2. A 46-year-old right-handed man with postencephalitic Parkinson's syndrome of 26 years' duration had advanced generalized severe muscular rigidity as a major problem. In addition he had mild tremor of the lower extremities and some tremor in the upper extremities. The patient could barely walk. Occlusion of the right anterior choroidal artery was performed on November 30, 1953, followed by occlusion of the left anterior choroidal artery on January 12, 1954. The status of the patient at the time this report was written, some two months after the second operation, was somewhat worse than it was preoperatively, but he was gaining strength. The final visual fields showed no defect although they remained constricted. The progression of Parkinsonism may have been somewhat accelerated by the stress from operation. There was no essential overall improvement of any symptoms. The rigidity in the left upper extremity apparently caused further flexion attitude of the elbow, wrist, and fingers.

CASE 3. The patient, a 60-year-old right-handed man, had had unilateral idiopathic Parkinson's syndrome for nine years. He walked with a hemiparetic attitude, striking the ball of the right foot, which was inverted and flexed. The weakness of the right extremities was mild, being most pronounced distally in the fingers and toes. The gripping pressure of the right hand was 25 pounds; of the left, 90 pounds. The movements of the right hand and foot were moderately stiff. There was moderate cogwheelism and rigidity in the right upper extremity and mild cogwheelism and rigidity in the right lower extremity. The alternating tremor was moderately severe and limited to the right hand and arm. It disappeared during volitional action and sleep. There were no other significant findings except for a slight central weakness of the right side of the face, and glove and stocking type of hypesthesia and hypalgesia and some decrease of vibration sense on the right. Following occlusion of the left anterior choroidal artery on Feb. 2, 1954, no essential change occurred in the tremor but a remarkable and, thus far, lasting disappearance of rigidity and cogwheel phenomena resulted. The patient walked with an improved gait, no longer striking the ball of the right foot; and he was able to evert and dorsiflex the foot with greater ease. The gripping pressure in the right hand increased to 70 pounds; it was 80 pounds for the left. The strength of the muscle groups of the right extremity was greatly improved. Postoperatively a moderate degree of anomia developed; but at the time of this report it was steadily disappearing.

CASE 4. A 44-year-old right-handed man had unilateral Parkinsonism of 30 years' duration manifested mainly by alternating tremor at rest confined to the right extremities with mild cogwheelism on the same side. In addition, there was evidence of mild pyramidal tract involvement in the right extremities. The left anterior choroidal artery was occluded on April 1, 1954, and, although for the first 24 hours postoperatively the tremor completely disappeared, it gradually returned within a week to almost its preoperative intensity and remained so.

DISCUSSION

The operative results in these four cases were disappointing. However, there can be little doubt that acute occlusion of the anterior choroidal artery resulted in immediate, although temporary, cessation of tremor in Cases 1, 2, and 4. Although rigidity was relatively unaffected in Case 2, continued alleviation of rigidity is an outstanding feature of Cases 3 and 4. It is believed that craniotomy per se did not influence these changes in the Parkinsonian syndrome of these patients. The explanation for the changes of tremor and rigidity is unknown but probably is related to ischemia and hypoxia of the globus pallidus, resulting in functional loss of its afferent and efferent systems. Pathologic studies of Case 1, which are not yet complete, may substantiate this thesis.

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Discussion by **AIDAN A. RANEY, M.D., Los Angeles**

The authors are to be congratulated for this careful and detailed work on occlusion of the anterior choroidal artery. It is only by such contributions that a new operative procedure such as this can be evaluated.

We have done this operation in one case. The patient, a man, age 59, was subject to tremor and rigidity of the right upper extremity which had begun ten years previously. He was operated upon nine months ago and has been free from the tremor and rigidity since then. The procedure resulted in what gross tests indicate to be incomplete homonymous hemianopia, although perimetric studies show it to be complete homonymous hemianopia. We are a little surprised that the patient is very well pleased despite the visual defect. It is interesting to note that in Case 3 in the foregoing report the patient regarded the results as quite satisfactory because of relief from the rigidity and weakness although the tremor persisted.

Our case and the second case in the foregoing report, both showing postoperative visual field defect, demonstrate that even though there is collateral circulation, it is not always adequate to maintain sufficient irrigation for regions of the brain not intended to be deprived of blood supply by the occlusion. This raises the question of variation in the vascular pattern or diminished collateral circulation. One is reluctant to carry out angiography in older patients and such a critical procedure as occlusion of the anterior choroidal artery is far more hazardous than angiography.

Failure to obtain uniform results from the operation indicate there is variation in the specific pathologic changes of Parkinsonism, or there is variation in the vascular pattern and anastomoses. It is common knowledge that the configuration of the circle of Willis very often does not conform to what we regard as the normal pattern. Similarly, one may reasonably expect variation in the anterior choroidal artery. In Case 4 in the foregoing report it was noted that this artery was much smaller than in the other three cases. One must assume that that patient had either an accessory anterior choroidal artery or that the areas usually supplied by the anterior choroidal artery were in that case supplied by branches from other arteries. This variability of the vascular pattern not only makes for failure of the procedure to control the rigidity and involuntary movements of Parkinsonism, but also allows unintended important neurologic deficit to result in those cases of inadequate collateral circulation or in instances in which the anterior choroidal artery irrigates more than the usual amount of tissue.

These experiences serve as a warning that occlusion of the anterior choroidal artery is not a procedure that can be offered without reservation to patients with Parkinsonism. It would be most unfortunate if patients with this distressing condition would gain the belief that by means of a simple operation they could obtain relief. It should be emphasized that the operation is most certainly a major surgical procedure, with the possibility of serious or disastrous complications, and that even if these complications are avoided, the procedure does not guarantee relief from Parkinsonism.

Strained Meat Formulas in Allergic Diseases Of Infants and Children

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• Strained meat formulas containing approximately the protein, carbohydrate, fat and mineral content of cow's milk have proven valuable in the study of animal milk allergy in infants and children.

Strained meat formulas have been given to over one hundred infants and children with bronchial asthma, eczema and gastrointestinal allergic disease. There were no instances of weight loss or anemia. Clinical improvement was evident in most cases.

ANIMAL MEAT JUICE was first used by one of the authors in 1931[7, 8] for the study and control of possible or definite allergic sensitivity to animal milk. Because of the low protein content in the juice that was used (approximately 5.5 per cent) liquefied meat containing 16 to 17 per cent protein was requested of various meat processors.* Liquefied meat incorporated in a formula containing approximately the protein, carbohydrate, fat and mineral content of cow's milk proved valuable in a study of sensitivity to animal milk in infants and children.[9] The value of this formula was confirmed by Glaser[2] in 1943 and again in 1944.[3] The formula, which was slightly modified and improved in 1950,[10, 11] is easily prepared at home or in hospital diet kitchens. In place of commercially strained meats, meat liquefied in a blender at home may be used, as suggested by Stuart.[12] This meat-base formula recently has become commercially available.†

Investigations by others[1, 4, 5, 6] indicate that meat-base formulas enriched with calcium, phosphorus, carbohydrates and vitamins are nutritionally equal to mother's and cow's milk. Such formulas offer definite advantages over milk substitutes based on soy proteins in that meat proteins are superior to those of vegetable origin which must be fed in appreciably larger quantities for normal growth, development and maintenance. Infants accept such formulas well. The incidence of diarrhea and indigestion, which is rather high when soy bean formulas are used, is relatively low with meat formulas. Fewer patients are sensitive to meat than to legumes. The meat-base formula is diluted as indicated by the age of the patient and other factors, as is cow's milk, in infant feeding. Other foods may be added in consideration of the age and nutritional requirements of the patient, with heed given at the same time to the possibility of sensitivity to the added food. Although skin testing with foods is fallible, large reactions by the puncture method, which is most desirable in infants and young children, make the inclusion of such reacting foods in the diet undesirable until the absence of clinical allergy thereto has been established by ingestion tests.

Meat-base formulas (see Table 1), modified according to special needs, may be fed to older children and adults unable to chew, swallow or digest ordinary meat or when tube feeding is necessary. Strained meats alone may be used in place of minced or ground meats in late infancy and childhood. Being precooked, sterile and low in fat, they may be fed as such or combined with pureed vegetables, cooked potato or tapioca in a thick mixture or thinned with pureed beef or lamb broth as a soup, salted to taste.

THERAPEUTIC AND DIAGNOSTIC USE

Food allergy should be studied as a possible cause of colic and feeding difficulties, other gastrointestinal symptoms, dermatitis, eczema, hives, suspected nasal allergy, croup, recurrent "colds," bronchitis, bronchial asthma, unexplained fever, anorexia, nervousness and irritability, so-called allergic toxemia and fatigue, and other less common manifestations of allergy. In the authors' practice, the initial diet for infants utilizes soy bean milk when sensitivity to animal milk is suspected or indicated by history or skin testing by the puncture or scratch method. When soy bean milk is not tolerated or sensitivity to it is demonstrated, meat-base formulas are employed. If the degree of sensitivity to milk is high, the lamb formula is prescribed; otherwise the meat-base formula containing beef, either made at home or commercially prepared, is used routinely. The choice between sesame or soy oil and potato starch flour or tapioca flour depends on the dietary history

Presented before the Section on Allergy at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

This study was supported in part by the Gerber Research Fund.

*In 1941 Clapp and Company supplied the material and since then it has been made commercially available by Swift & Company and by Gerber Products Company.

†Gerber's Meat-Base Formula.

TABLE 1.—*Substitute formula for cow's milk containing strained meats.*

	Wt. grams	Measure
Strained lamb, 15.6% protein, 4.5% fat	212.0	1 cup—7 oz.
or		
Strained beef, 17.7% protein, 3.0% fat	186.0	¾ cup—6 oz.
Sesame oil or soy oil	32.5	3⅓ Tbsp.
Sugar	30.0	2 Tbsp.
Potato starch flour, 83% C	24.0	2½ Tbsp.
or		
Tapioca flour, 88% C	23.0	2½ Tbsp.
Calcium carbonate	3.0	1 Tsp.
Salt	1.75	½ Tsp.
Water to make a volume of 1,000 cc.		4¼ cups

Total for 1,000 cc.: Carbohydrates, 50 gm.; calcium, 1.24 gm.; protein, 33 gm.; fat, 40 gm.; phosphorus, 0.31 gm.; iron, 0.005 gm. Calories: 692.

All measurements are level, using standard measuring cups and spoons. Heat water to boiling in top of double boiler. Add sugar, salt, and calcium carbonate. Mix the potato starch or tapioca flour to a paste in 1/3 cup cold water and stir into the boiling water. Cook for 45 minutes, stirring occasionally to prevent lumping. If necessary add water to allow for evaporation. Add the strained meat and oil, mix thoroughly, and reheat.

and previous diet trial. The decision to use bottle or cup feeding depends on the infant's or child's feeding habits. The commercially available canned meat-base formula is usually diluted with equal parts of boiled water, as is evaporated milk.

Because the vitamin A and riboflavin content of meat-base formulas is not equal to that of cow's milk, a preparation containing adequate amounts of these and other B complex vitamins is prescribed. Such vitamin preparations should be synthetic until tolerance to fish proteins is assured.

In infants, as the need for solid food arises, the authors customarily feed additional strained and later minced meats as such, and potato and tapioca as cereal substitutes are added as advised in the authors' cereal-free elimination diet for infants. This insures the continued feeding of relatively non-allergenic foods. Cereal grains, pureed vegetables and fruits, and later other foods may be added according to tolerance and need as advised.

In critically ill allergic infants and children, as well as adults, these strained meat formulas are useful for short periods of tube feedings. Extra meat, sugar, and oil may be added to increase caloric intake.

PROPHYLACTIC USE

The meat-base formulas have proven to be a valuable addition to rotating diets employed for purposes of prophylaxis of allergic disease caused by sensitivity to foods. They may be fed alternately with soy bean milk in an effort to avert sensitization from the overfeeding of single foods. When a high degree of sensitivity to soy bean milk or animal milk exists in parents or siblings, the lamb-base formula is used exclusively over a period of several months after weaning. However, if there is large reaction to puncture test with lamb and no reaction to beef or pork, the latter meats would be preferred, especially if, upon the feeding of lamb, symptoms of sensitivity develop.

Over one hundred infants and children who had eczema, bronchial asthma and gastrointestinal allergic disease have been given strained meat formulas for periods exceeding three months. In no instance was weight loss observed. Routine examinations of the blood revealed no resultant anemia. A rise in hemoglobin content was noted in most patients. Clinical improvement was evident in most cases.

2940 Summit Street.

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Relation of Trauma to Disease

Aspects of Correlation in Cases Involving Compensation

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• *In cases of disease possibly etiologically related to industrial trauma and therefore raising questions of compensation, attention should be given at the very outset to factors that might help supply the answers to these questions.*

In such circumstances it is helpful if the first physician to examine the patient after the onset of disease attempts to:

1. Determine whether the disease has been accelerated by injury or is proceeding at the usual rate;

2. Establish the stage of the disease;

3. Estimate the time of onset;

4. Make differential diagnosis (in many cases) between diseases of idiopathic origin and unaffected by trauma and diseases directly due to trauma.

IT IS COMMON MEDICAL KNOWLEDGE that the lay public usually overemphasizes the role of trauma as a causative factor in occupational diseases. On the other hand, some physicians are too much inclined to give trauma short shrift in etiological consideration. Further study of the problem is needed because of the continuing extension of compensation laws to cover more and more problems of disease in relation to the occupation of the patient. More knowledge is needed because of the growing social and legal implication of such relationship. It is admitted that in many areas of the subject the available knowledge is incomplete; but it is very complete in many others. Some variance of opinion is probably justified, but too much of the difference of opinion at the present time is due to unfamiliarity with the subject. Physicians in industry are constantly confronted with problems that stem from a private practitioner's inadequate attempts to ascertain the true facts of a case.

A single injury (nonrecurrent trauma) may fall into one of five different categories in its relationship to a disease, if such relationship exists. These relationships are: (1) direct; (2) temporarily aggravating; (3) accelerating; (4) precipitating symptoms of a latent preexistent process; (5) bringing the patient's attention to a previously unrecognized condition. Except in the direct classification of producing disease, trauma represents a secondary, nonspecific and inconstant factor. Conversely, it must be recognized that preexistence of disease may also lead to trauma, as in the instance of syncope resulting in injury.

It can be stated further that, with regard to their relationship to trauma, diseases may be classified into three groups, as follows: (1) diseases directly due to trauma, such as fractures, wounds and infections; (2) diseases that are never due to a single injury, such as measles or arteriosclerosis; (3) diseases usually occurring without trauma, but in which sometimes trauma may be a causative factor. It is with regard to diseases of this group that controversies most often arise. Examples of diseases in this group are Charcot joint, renal abscess, exophthalmic goiter and the arthritides. Each case in this classification must be studied on its own merits and in light of the facts pertinent to that given case. In some instances, repeated observation by various physicians that there is clinical evidence of a given disease following trauma of a certain kind is sufficient to classify the condition, even though usually the disease is one that usually develops without injury as a precursor. In some diseases experimental evidence indicating a relationship of trauma to the disease in question carries great weight; but negative results of experimental evidence do not necessarily preclude a decision that, in a given case, trauma caused a disease. When carefully done, statistical studies may have definite classifying value. Pathological examination, which would of course supply data that ultimately would provide a better basis for evaluation of cases in the future, is unfortunately not carried out often enough.

Should a physician feel that a given case belongs in the third of the three classifications defined above, he should try to arrive at a decision as to what part trauma may have played as a causative factor. To do this, the following points should be considered:

1. The condition of the patient, both physical and mental, before injury.

2. The type, severity and site of the injury. The importance of a physician's making early records,

Chairman's address: Presented before the Section on Industrial Medicine and Surgery at the 83rd Annual Session of the California Medical Association, Los Angeles, May 9-13, 1954.

including all facts available, cannot be too strongly stressed.

3. The immediate effects of the injury, both subjective and objective. Once again, these findings in detail can be of immense value at a later date. Too often a medical record simply states only that there was "contusion of the back," with no description of the actual objective findings or the specific location.

4. "Bridging symptoms"—in this category frequent progress notes, covering the symptoms of the patient between the time of injury and the onset of a given disease process, carry great weight.

5. The latent period of the disease. This refers to the lapse of time between the date of injury and the appearance of the disease.

6. The accurate diagnosis of the disease—including the site of onset, the nature of onset, and the subsequent course.

Records of preemployment examinations and periodic physical examinations can be of considerable value in such determinations. However, if these examinations were poorly done or the results poorly recorded, the records may be entirely misleading instead of helpful.

Early adequate records covering the severity, site and type of injury and the immediate symptoms and signs are of utmost importance. In general, it may be said that if a disease results from trauma, symptoms of some kind are usually present more or less constantly from the date of injury to the appearance of the disease. If the patient does not follow the convalescent sequence to be expected following an injury, the continuing symptoms may warn that some other condition will soon appear.

As to the time between injury and disease, the latent period may have some resemblance to the time between exposure and development of the infectious diseases. It is of course variable with the disease involved, but represents the time necessary for trauma to institute the disease and the pathological process to develop to a stage at which it can be diagnosed. Once diagnosis of the disease is made, it is often obvious that the time is too short, or too long, for there to have been any relationship to a given injury. Between these two extremes there is, unfortunately, considerable leeway in certain cases, due to present inadequate knowledge in this respect. The question of whether an injury accelerated an already preexistent disease must be considered in the light of the normal course of that disease. In diseases in which the process normally becomes steadily worse, the fact that an injury occurred intercurrently is by no means an indication that the trauma was a causative factor.

It must not be forgotten that psychic as well as physical trauma may be a factor in production of disease. The diagnosis should not be limited to simply giving the disease process a name; attempt should be made to:

1. Determine whether the disease has been accelerated by injury or is proceeding at the usual rate.

2. Establish the stage of evolution of the disease.

3. Estimate the time of onset.

4. Make a differential diagnosis (in many cases) between diseases of idiopathic origin and unaffected by trauma as opposed to those directly due to trauma.

It should be emphasized that the physician should consider only what relationship the conditions brought about by injury in a given case may bear to whatever disease is present and possibly attributable to the injury. Although medicine is admittedly not an exact science, the physician should consider the facts that are available and give his best opinion without equivocation. He should not be swayed by consideration of what effect his conclusions might have upon others, such as the patient, the insurance carrier and legal representatives. His conclusions should not become deformed by consideration of possible economic or social consequences, for such matters probably belong in the field of social policy and the law. The need for better knowledge in this field is evident in the continually expanding social pattern and changing legal decisions; and the knowledge can be obtained only by continued efforts by physicians meeting these problems to properly evaluate and analyze the factors involved, and to pass on the knowledge to other physicians.

111 West Seventh Street.

CASE REPORTS

- **Botulism Treated with Tracheotomy and Respirator**
- **Familial Periodic Paralysis**
- **Meningococcus Meningitis**

Botulism Treated with Tracheotomy and Respirator

WALTER T. SUMI, *M.D.*, Los Angeles

A 37-YEAR-OLD WHITE WOMAN was well until June 24, 1953, when she began to have double vision. The following day her tongue seemed "thick" and she had some difficulty in talking. She also had slight drooping of the eyelids, seemed to talk through her nose, noticed increased salivation and had difficulty in swallowing solid foods. A physician diagnosed myasthenia gravis and prescribed Prostigmine (neostigmine) tablets but the patient received no benefit from the treatment. Weakness of the neck and of the legs began June 28. There was no fever, headache, stiffness of the neck or back, and no respiratory distress at any time. On June 30 the patient choked on a piece of meat, and the physician who was treating her referred her to the Communicable Disease Unit of the Los Angeles County General Hospital on suspicion of poliomyelitis.

The patient was well developed, well nourished and appeared to be in no acute distress. The temperature was 97.6° F., the pulse rate 76 per minute and respirations 20 per minute. The skin was clear and no evidence of recent trauma to the head was noted. The pupils were round, regular and equal, and reacted well to light. The extraocular movements were normal, and no drooping of the eyelids was noted. The ears, nose and throat were normal. The gag reflex was intact, and there was no pooling of secretions in the hypopharynx. The neck was supple, but there was pronounced weakness of the neck muscles, and "head drop" was present. The chest was symmetrical with good respiratory movements. The lungs and the heart were normal. The abdomen was soft and no organs or masses were palpated. The deep tendon reflexes were present and equal, but all the superficial reflexes were absent. The Kernig, Brudzinski and Babinski signs were absent. There was pronounced weakness of the neck muscles, diaphragm, deltoid muscles and the hip flexors.

The hemoglobin content of the blood was 16 gm. per 100 cc. and leukocytes numbered 6,400 per cu. mm. with 60 per cent polymorphonuclear cells. No abnormalities were observed in the cerebrospinal fluid and there was no increase in pressure. (In subsequent examinations of the blood the serum potassium content was 3.9 to 4.6 millequivalents per liter.)

The diagnosis on admission was bulbospinal poliomyelitis with myasthenia gravis to be ruled out.

The day after admission the patient remained afebrile and continued to have pronounced difficulty in swallowing liquids as well as solids. There was slight pooling of secretions in the hypopharynx and the gag reflex seemed diminished. Prostigmine, 2.5 mg., was given intramuscularly and there was subjective improvement temporarily, the patient reporting increased ability to swallow and less weakness in the neck; but the pooling persisted.

A consulting neurologist made the diagnosis of myasthenia gravis and advised a regimen of Tensilon (edophronium chloride), Prostigmine and atropine every four hours. The patient had little if any response to these drugs and seemed to be gradually deteriorating. On July 3, because of excessive accumulation of mucus and diminution of vital capacity to 650 cc., tracheotomy was performed. On the following day there was no improvement in the respiratory status in spite of almost continuous suctioning through the tracheotomy tube. The patient steadily became more and more exhausted, and it was decided to place her in a respirator. She accommodated well and was immediately more comfortable. As the patient was unable to swallow, nutrition was maintained by nasogastric tube feedings.

On July 7 an attending physician elicited a history of contact with a home-canned product, and his impression was botulism. The patient apparently opened a can of huckleberry juice and tasted it, two days before the onset of symptoms. Because it tasted bad she promptly discarded the remainder of the contents of the can. *Botulinus toxin A* was eventually demonstrated in another specimen of this home-canned huckleberry juice by the state and city health departments.

The patient improved slowly and gradually regained the ability to swallow. After about one month the patient was taken out of the respirator for a short interval each day. After 44 days in the respirator she was finally able to remain out for 24 hours on her own. The tracheotomy tube was removed two

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days later. However, she continued to bring up thick, tenacious mucus with some difficulty because of a weakened cough. On August 23, she became febrile and dyspneic and upon physical examination dullness to percussion and diminished breath sounds were noted in the right lower lung field, and a density of the lower two-thirds of the right side of the chest was noted on an x-ray film. Bronchoscopy was done the next day and a large amount of thick, tenacious mucus was removed from the right lower lobe bronchus. The patient felt improved after this procedure, but there was essentially no change by auscultation and percussion and by x-ray. Following antibiotic therapy she recovered completely.

SUMMARY

This report concerns a protracted non-fatal form of botulism with severe weakness of muscles and respiratory paralysis apparently due to the ingestion of an extremely minute quantity of the botulinus toxin. Tracheotomy and use of a respirator probably were life-saving. Paralysis of the pharyngeal and respiratory muscles closely allies this disease to bulbar poliomyelitis insofar as management and treatment of the patient is concerned. In spite of the complicating atelectasis and pneumonia, the patient recovered completely.

1200 North State Street.

Familial Periodic Paralysis

JOHN L. DENNEY, M.D., Los Angeles

FAMILIAL PERIODIC PARALYSIS was first reported by Musgrave[4] late in the 17th Century. The familial characteristics were first described in 1882. The observation that serum potassium content decreased during an attack was reported by Biemond and Daniels in 1934.

Characteristically the onset is noted in adolescence, although it has been reported as early as the sixth month of life and as late as the sixth decade. Attacks usually occur at night during sleep. They may be precipitated by a heavy meal, by violent exercise or by exposure to cold. Attacks vary in severity from patient to patient and from time to time in the same patient. The attacks may range from a mild weakness of a single muscle group to complete quadriplegia with respiratory paralysis and death. The cranial nerves are usually spared. The disease usually becomes less severe with age.

REPORT OF A CASE

A 15-year-old Caucasian girl was referred to the Communicable Disease Unit of the Los Angeles County General Hospital May 6, 1953, with a diagnosis of poliomyelitis and a history of paralysis of six hours' duration involving all four extremities.

The patient had awakened at 4 o'clock on the morning of entry, unable to move and with complaint of stiffness of the neck without headache. Upon admittance she was alert, afebrile and beginning to recover ability to move her arms. Upon physical examination, complete paralysis of arms and legs with pronounced paresis of the hands and feet was noted. The neck was supple but weak. Deep tendon reflexes were absent throughout. The spinal fluid was clear; there were no cells. Reaction to a Pandy test showed a trace of protein; the sugar content was normal. A serum potassium determination on blood taken at the time of admission revealed a level of 2.1 mEq. per liter. An electrocardiogram was consistent with hypopotassemia.

The patient recalled three to four similar previous episodes during the preceding two years, all occurring at night. From members of the family it was learned that the patient's great-great-grandfather, great-grandfather, grandfather, father, four of six uncles (father's brothers), none of four aunts, and two of the patient's siblings had had similar episodes.

The patient's father had had the most severe disease of the group; attacks occurred regularly after severe exercise and were frequently precipitated by a heavy meal.

The patient gradually regained function during the 24 hours after admittance and the remainder of the stay in hospital was uneventful. An attempt to precipitate an attack with a glucose tolerance test was unsuccessful. Serum potassium remained within normal limits during the test. An electroencephalogram was normal.

Communicable Disease Unit, Los Angeles County General Hospital, service of A. G. Bower, M.D.

SUMMARY

A case of familial periodic paralysis is reported. Although previously undiagnosed, the disease was traced through five generations of the patient's family.

1200 North State Street.

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Meningococcus Meningitis

Three Cases Resistant to Penicillin

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PENICILLIN IS WELL-KNOWN as the antibiotic of choice in the treatment of Neisseria meningitidis infection. Also of great interest is the extraordinary sensitivity of this organism to the sulfonamides. In the Glasgow epidemic of 1907 there was a case fatality rate of 70 per cent. From 1920 to 1936, the composite case fatality rate as computed from reports in various areas of the United States was 51.2 per cent. This was after the advent of the use of immune serum in the treatment of the disease.

Penicillin and the sulfonamides have strikingly lowered the fatality rates of meningococcal meningitis to less than 10 per cent. Some physicians feel that the use of two antibiotics may be harmful, but in the three cases reported upon herein, two antibiotics were used until it was found that the organisms were resistant to penicillin, and there were no harmful effects clinically evident. Two of the patients had been given penicillin at various times previously, and in them the organisms were completely resistant to penicillin.

CASE 1. An 18-year-old white male was admitted to hospital the night of Jan. 31, 1953, with a history of vomiting, then sore throat and fever (103° F.) for 24 hours and a slight headache and extreme restlessness the night before admittance. The morning of the day of admittance, the patient noted a rash on his body. He had had "flu," consisting of sore throat and nausea, a week before. Intermittently during the previous year he had received penicillin for sore throat and colds.

Upon physical examination the patient was observed to be lying quietly in bed, alert and complaining of headache. There were petechiae scattered over the trunk and extremities as well as in the conjunctivae. The vessels of the throat were engorged. There was pain on flexion of the neck, but no nuchal rigidity. Deep tendon reflexes were normal and no pathological reflexes were noted.

The spinal fluid was cloudy and contained Gram-negative diplococci. A diagnosis of meningococcic meningitis was made. Neisseria meningitidis grew on cultures of spinal fluid and blood, Streptococcus viridans and Staphylococcus aureus on cultures of material from the throat, and Staphylococcus albus and diphtheroids on cultures of exudate from petechiae.

Therapy consisted of five million units of sodium penicillin intravenously and twenty-five million units of potassium penicillin every eight hours for five days until sensitivity studies were returned. The organisms were reported resistant to penicillin; moderately sensitive to streptomycin; and highly sensitive to chloramphenicol and Terramycin. The patient had allergic sensitivity to sulfa drugs, so none was given. At first 500 mg. of chloromycetin was given intravenously every two hours, four times; then intramuscularly every three hours until Feb. 3, and then 500 mg. orally every four hours.

From the Communicable Disease Unit, Los Angeles County General Hospital, Service of A. G. Bower, M.D.

TABLE 1.—*Data on cerebrospinal fluid and blood (Case 1)*

CEREBROSPINAL FLUID

Date	Cells: Total per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Sugar*	Pandy Test reaction
Jan. 31, 1953	450	100	....	5 gtt.	1 plus
Feb. 1, 1953	4,180	98	....	3 gtt.	3 plus
Feb. 2, 1953	1,126	75	25	3 gtt.	2 plus
Feb. 3, 1953	716	70	30	4 gtt.	1 plus
Feb. 4, 1953	75	55	20	4 gtt.	trace
Feb. 5, 1953	40	6	34	2 gtt.	trace
Feb. 6, 1953	32	3	29	3 gtt.	trace
Feb. 9, 1953	8	....	100	trace	trace
Feb. 12, 1953	11	....	100	3 gtt.	trace
Feb. 15, 1953	11	....	100	5 gtt.	trace
Feb. 18, 1953	4	....	100	3 gtt.	trace
Feb. 21, 1953	5	....	100	3 gtt.	trace

*Stated in number of drops of spinal fluid required to reduce 1 cc. of Benedict's solution (normal, 2 to 3 drops).

BLOOD

Date	Cells: Leukocytes per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Hemoglobin (gm.)
Jan. 31, 1953	42,000	92	....	13.5
Feb. 1, 1953	30,000	95	....	13.5
Feb. 3, 1953	13,600	84	16	12.5
Feb. 4, 1953	8,400	77	23	15.0
Feb. 5, 1953	19,700	80	20	13.5
Feb. 14 1953	10,550	48	52	13.0
Feb. 17, 1953	19,400	74	26	15.5
Feb. 20, 1953	9,100	71	29	12.5

The clinical course was satisfactory and on Feb. 4 the patient was tolerating diet well. He became afebrile on Feb. 7 and remained so. Data on laboratory examinations of the cerebrospinal fluid and the blood are given in Table 1.

Electroencephalograms on various dates were as follows: Feb. 1, moderately diffuse, abnormal; Feb. 9, normal; Feb. 11, moderately diffuse, abnormal; Feb. 16, mildly diffuse, abnormal; Feb. 20, normal.

Antibiotic therapy was discontinued Feb. 15 and the patient was discharged Feb. 22, twenty-two days after admission, free of symptoms.

CASE 2. A two-year-old white girl was admitted to hospital Feb. 3, 1953, with history of fever (102° F.), listlessness and malaise of five days' duration. The night symptoms started, the patient had a convulsion that lasted more than five minutes and she vomited anything ingested. The next day a physician examined her and administered 600,000 units of penicillin. She continued listless and febrile but did retain some liquids. The following day penicillin was administered again, and then 300,000 units every six hours.

The day before admission to hospital the patient had pain in the knees and elbows but there were no more convulsions or vomiting. Nuchal rigidity developed, however, and the patient was hospitalized. Until the present illness she had never been given penicillin.

When examined upon admittance, the patient was lethargic, listless and very irritable. There were no petechiae present on the body. The vessels of the nose were engorged but the pharynx was clear. There

TABLE 2.—*Data on cerebrospinal fluid and blood (Case 2)*

CEREBROSPINAL FLUID

Date	Cells: Total per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Sugar	Pandy Test reaction
Feb. 3, 1953	1,296	64	36	7 gtt.	2 plus
Feb. 4, 1953	504	74	26	3 gtt.	1 plus
Feb. 5, 1953	522	62	38	3 gtt.	trace
Feb. 6, 1953	132	84	16	3 gtt.	2 plus
Feb. 7, 1953	58	3	55	3 gtt.	.....
Feb. 10, 1953	Bloody	....	....	.....	.....
Feb. 13, 1953	12	1	11	3 gtt.	trace
Feb. 17, 1953	11	1	10	3 gtt.	slight trace
Feb. 20, 1953	18	....	18	3 gtt.	trace
Feb. 23, 1953	Bloody	....	....	.....	.....
Feb. 26, 1953	Bloody	....	....	.....	.....
Mar. 1, 1953	.....	....	1	3 gtt.	trace
Mar. 3, 1953	Bloody	4	29	.....	.....
Mar. 9, 1953	22	2	20	.....	trace
Mar. 13, 1953	6	....	all	3 gtt.	neg.

BLOOD

Date	Leukocytes per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Hemoglobin (gm.)
Feb. 3, 1953	27,000	91	9	12.0
Feb. 4, 1953	16,500	58	42	12.5
Feb. 5, 1953	18,950	....	....	.....
Feb. 6, 1953	9,000	42	58	10.0
Feb. 8, 1953	7,000	80	20	12.0
Feb. 14, 1953	10,200	52	48	11.0
Feb. 17, 1953	7,200	62	38	13.0
Feb. 20, 1953	9,950	56	44	12.0
Feb. 26, 1953	5,200	62	38	15.0
Mar. 1, 1953	7,400	38	62	12.0
Mar. 9, 1953	7,600	50	50	12.5
Mar. 12, 1953	6,000	50	50	13.0

was three plus nuchal rigidity and the Kernig and Brudzinski signs were present. Spasm of two plus degree was noted in the back and hamstring muscles. Deep tendon reflexes were equal and hyperactive.

A specimen of spinal fluid was grossly cloudy and Gram-negative diplococci were observed on microscopic examination. Neisseria meningitidis grew on cultures of spinal fluid but there was no growth on cultures of the blood. Cultures of material from the throat produced Staphylococcus albus.

The patient received 200 million units of potassium penicillin in the first 72 hours in the hospital. Terramycin was given intravenously, 250 mg. every four hours for two days and then 250 mg. every six hours for one day. Then Terramycin was given by mouth, 250 mg. every four hours for two days and then that amount every six hours. Terramycin then was discontinued and sodium penicillin (1 million units) was given every four hours for two days, as well as penicillin, 600,000 units twice daily for five days. In vitro, the organism was resistant to low concentrations of penicillin and moderately sensitive to high concentrations. They were resistant to streptomycin and highly sensitive to chloramphenicol, aureomycin and Terramycin. The patient was given 1.75 gm. each of sulfadiazine and sulfisomidine on admission but this medication was discontinued because of erythrocytes in the urine.

TABLE 3.—*(Case 3) Data on cerebrospinal fluid and blood, and on concentrations of sulfa drugs administered*

CEREBROSPINAL FLUID

Date	Cells: Total per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Sugar	Pandy Test reaction
Feb. 8, 1953	42	88	12	4 gtt.	neg.
Feb. 9, 1953	853	81	19	2 gtt.	trace
Feb. 11, 1953	135	62	38	2 gtt.	trace
Feb. 12, 1953	30	6	24	3 gtt.	trace
Feb. 14, 1953	1	....	1	3 gtt.	trace
Feb. 16, 1953	0	....	....	3 gtt.	trace
Feb. 17, 1953	11	....	11	3 gtt.	trace
Feb. 20, 1953	Bloody	....	....	.....	.....
Feb. 23, 1953	8	....	8	3 gtt.	1 plus
Feb. 26, 1953	4	1	3	3 gtt.	trace
Mar. 1, 1953	9	3	6	3 gtt.	1 plus
Mar. 6, 1953	5	2	3	3 gtt.	.....

BLOOD

Date	Leukocytes per cu. mm.	Cells: Polymorphonuclear (Pct.)	Cells: Lymphocytes (Pct.)	Hemoglobin (gm.)
Feb. 8, 1953	10,100	70	30	15.0
Feb. 9, 1953	23,200	55	45	12.5
Feb. 10, 1953	19,000	85	15	10.5
Feb. 11, 1953	16,600	80	20	12.5
Feb. 12, 1953	9,650	75	25	11.0
Feb. 14, 1953	6,400	46	54	13.0
Feb. 16, 1953	8,450	55	45	14.0
Feb. 17, 1953	9,250	73	27	13.0
Feb. 20, 1953	9,450	53	47	12.5
Feb. 26, 1953	5,600	62	38	15.0
Mar. 1, 1953	9,000	48	52	13.0
Mar. 6, 1953	7,450	67	33	13.0

SULFA DRUG CONCENTRATIONS (mg. per 100 cc.)

Date	Blood	Spinal fluid	Urine	pH of urine
Feb. 9, 1953	25.0	11.1	7.9	6.0
Feb. 10, 1953	49.2	31.2	.....	....
Feb. 11, 1953	40.6	25.0	34.3	5.0
Feb. 12, 1953	62.5	37.5	87.5	5.0
Feb. 14, 1953	9.3	5.0	10.0	....
Feb. 16, 1953	1.2	1.2	5.3	....
Feb. 17, 1953	0	0	0	....

The clinical course was satisfactory and the day following admission the patient was ingesting fluids. No convulsions occurred. The temperature was 101° F. on admission and varied from 98.2 to 100.4° F. until Feb. 10. Thereafter the temperature rose occasionally to 100.2° F. up to the time of discharge from the hospital.

Data on laboratory examination of the spinal fluid and blood are given in Table 2.

Antibiotic therapy was stopped on March 1 and the patient was discharged as cured 39 days after admission to the hospital.

CASE 3. A four-and-one-half-year-old white boy was admitted to hospital Feb. 8, 1953, with two-day history of rhinitis and pain in the legs and feet and of vomiting and fever for one day. The patient had been well previously except for "runny nose." The evening he entered the hospital the patient's mother noted a rash on his abdomen, which spread over the body. There was no history of exposure to any disease. The patient previously had had penicillin from time to time for frequent colds and sore throat.

Upon physical examination the patient was observed to be acutely and severely ill, but apprehensive and oriented. The temperature was 104.6° F. and the blood pressure 102/60 mm. of mercury. Generalized petechial eruption was present over the trunk and extremities. The face was flushed. There was one plus nuchal rigidity. Reflexes were equal and active. Kernig's sign was present. The spinal fluid was clear.

A diagnosis of meningococcus meningitis was made and treatment was started. Cultures of spinal fluid and petechial exudate grew Neisseria meningitidis.

Therapy consisted of 25 million units of sodium penicillin in the first eight hours and 200 million units of potassium penicillin in the first 48 hours by the intravenous route. Sensitivity studies were carried out and the organisms were found to be resistant to penicillin, moderately sensitive to streptomycin and highly sensitive to chloramphenicol, aureomycin and Terramycin. The patient was given 250 mg. of Terramycin intravenously every four hours for four days. Then the antibiotic was given by mouth until Feb. 25 when therapy was discontinued. Sulfadiazine and sulfisomidine, 2.5 gm. each, were given every eight hours by clysis for eight times, and then 0.5 gm. each orally every four hours for four days. The evening of admission, gastric suction was applied and was continued for one day; "coffee ground" material was removed.

Improvement was pronounced, particularly in the first 48 hours. The first evening there were three generalized convulsions; after that, none. The temperature decreased from 104.6° to 98.6° F. eight hours after admission. It then varied from 98.6° to 100.8° F. for seven days and after that was normal. Data on laboratory examinations of cerebrospinal fluid and blood are given in Table 3.

Reports on electroencephalograms made during the illness were as follows: Feb. 11, diffusely abnormal; Feb. 20, mild diffusely abnormal; Feb. 27, normal.

Antibiotic therapy was discontinued Feb. 25 and the patient was discharged, well, March 6, 28 days after admission.

DISCUSSION

In the three cases of meningococcus meningitis presented, the organisms were resistant to penicillin. If it had been decided that penicillin was the drug of choice, since Neisseria meningitidis usually is so sensitive to it, and no other agent had been used, the end result might have been fatal. Fortunately, two antibiotics were used at the beginning of therapy with the thought in mind that if the organisms were not sensitive to one antibiotic they might be to the other. With the widespread use of antibiotics today for minor illnesses, it seems logical, when meningitis is diagnosed, to use two or more in the initial therapy until sensitivity studies are done.

SUMMARY

Three cases of meningococcus meningitis are reported in which the infecting organisms were resistant to penicillin, as sensitivity studies determined. Fortunately, other antibiotics were used with penicillin at the outset of therapy.

1200 North State Street.

California MEDICINE

For information on preparation of manuscript, see advertising page 2

EDITORIAL

Closed Panel Medicine and the Law

On July 9, 1954, the California Supreme Court announced its decision in the case of Complete Service Bureau against the San Diego County Medical Society. The judges were divided, five in favor of Complete Service Bureau and two in favor of the Society. The written opinion handed down by the majority creates brand new law in the field of closed panel prepaid medical care. It overrules *sub silentio* the court's own prior decisions holding that a corporation may not hire physicians, dentists or lawyers and then sell their services to the general public on a contract basis and by means of advertising or solicitation.

Complete Service Bureau was incorporated in 1939 as a "non-profit" corporation by a layman, W. D. Parmer. He immediately entered into a long-term management contract with the Bureau under which he was given complete control over its operations and, as his "take," a percentage of the gross receipts (25 per cent). Several years later and without the payment by him of any money, he acquired a majority stock interest in a "for-profit" corporation which owns the land, building and equipment occupied by Complete Service Bureau.

After Parmer's acquisition of control of the landlord corporation, Complete Service Bureau paid ten per cent of its gross receipts to the landlord corporation, presumably as "rental." Throughout its history Complete Service Bureau has maintained a staff of salesmen on a commission basis and has solicited the general public to purchase its contracts by door-to-door selling, direct mail literature and newspaper and radio advertising. Its contract requires the subscriber to pay $2.50 per month, for which the subscriber is entitled to limited hospitalization at the expense of the Bureau, and physicians' services from the physicians of the Bureau at a fixed fee schedule. The fee schedule is quite low, ranging from one dollar for a follow-up office visit to a maximum of ninety-five dollars for major surgical operation. However, all subscribers pay cash at the time of service. The Bureau employs ten full-time salaried physicians.

The Supreme Court, reversing a contrary decision of the District Court of Appeal, held that the corporation could legally engage in a medical service plan and supply medical services through salaried physicians as long as there was no public admission of interference by the corporation or its lay managers with the actual diagnosis, prescriptions or treatment of patients. The provisions of the Medical Practice Act, prohibiting advertising, fee splitting and the use of solicitors (cappers or steerers) were shrugged aside. As to advertisement, the court did not believe that any of the Bureau's methods were misleading. On the subject of fee splitting, the court said: "It is customary for medical groups to pay rent, employ business managers and compensate members on a unit basis." Solicitation, the court said, is prohibited to individual physicians, but not to medical service groups, "since," said the court, "the public is being solicited to join the group and not for any particular practitioner"!

The two dissenting justices vigorously argue that the Bureau and its manager, Parmer, were intervening in the practice of medicine for the personal benefit of Parmer and that "arrangements of this type have been consistently condemned." The dissenting justices also pointed out that Parmer's percentage arrangement necessarily constituted illegal fee splitting and that the case, as a whole, was one of unlawful practice of medicine.

In the course of the majority opinion the court repeatedly explains away Parmer's ownership and control by characterizing him as merely a business manager and by comparing Complete Service Bureau with medical groups composed entirely of phy-

sicians, who employ business managers. The differences between a group of physicians who form a partnership for the practice of medicine with a business manager to handle their business affairs as their agent, and a corporation controlled by a layman in which the physicians are mere hirelings, either were not understood by the majority justices or were intentionally ignored. The stress placed upon terms such as "group practice," "business management" and "low cost medical service" leads one to believe that the court intended — regardless of previous Supreme Court decisions—to legalize closed panel medical care. It would appear that the commercial features of Complete Service Bureau were glossed over so that the court could assure closed panel groups that they are safe from legal attack. For example, in discussing the public policy against corporate practice of medicine, the court said: "However, this principle is not contravened by permitting a group of interested persons to form a non-profit corporation to secure for themselves medical services at a low cost."

LETTERS to the Editor . . .

ON PAGE 26 [Advertising Section] of CALIFORNIA MEDICINE for July 1954 is quoted an extract from the J.A.M.A. entitled "Children Should Be Taught to Be Right Handed." I doubt the validity of quoted premises. "The infant has no definite sidedness either left or right; he is ambi-lateral, not ambi-dextrous, and both sides are inept." "A one sided pattern begins to emerge at about 18 months and continues to develop for many years as one sided skills are learned." I question these statements.

I have long understood that right or left handedness is an intrinsic matter. Many years ago I was taught a simple test to determine whether a person is *naturally* right or left handed. Extend the arm from the body with the forefinger extended, the other fingers and thumb closed as if pointing a pistol. With both eyes open and focused on the aiming point, aim the finger at an object 30 feet or so distant, and then close one eye. Regardless of which hand one is pointing with, if upon closing one eye one finds the open eye looking down the finger at the aiming point the open eye is on the side of natural handedness.

For instance, if a naturally right handed person aims with his right forefinger, as above, and closes the left eye the right eye will be found looking along the finger directly at the aiming point. If the left eye is left open and the right eye closed the finger will appear to be pointing to the right of the aiming point.

In the case of a naturally left handed person who has been trained from infancy to use the right hand, the foregoing test will reveal that he aims with the left eye instead of the right. The pistol expert, who aims with both eyes open is usually unaware of which eye he is actually aiming with.

Many years ago a friend of mine on the police force was a pistol expert. He believed that he was right handed, and wrote and shot with his right hand. He lost his right thumb and was thus forced to shoot with his left hand. He quickly developed into an even better marksman shooting left handed than he had been shooting right handed. The aiming test outlined above indicated that he was naturally left handed.

Yours sincerely,

JOHN H. SCHAEFER, M.D.

525 South Flower
Los Angeles 17, California

Annual Meeting

SAN FRANCISCO

May 1-5, 1955

Papers for Presentation

If you have a paper that you would like to have considered for presentation, it should be submitted *to the appropriate section secretary* (see list on this page) not later than November 20, 1954.

Scientific Exhibits

Space is available for scientific exhibits. If you would like to present an exhibit, please write immediately to the office of the California Medical Association, 450 Sutter Street, San Francisco 8, for application forms. To be given consideration by the Committee on Scientific Work, the forms, completely filled out, must be in the office of the California Medical Association not later than December 1, 1954. (No exhibit shown in 1954, and no individual who had an exhibit at the 1954 session, will be eligible until 1956.

Medical Motion Pictures

Applications are now being received for the program of the Medical Motion Pictures Section. Please submit your application to Arthur E. Smith, M.D., Chairman, Medical Motion Pictures Section, 1930 Wilshire Boulevard, Los Angeles 57, California.

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450 Sutter Street, San Francisco 8

UROLOGY . . . . . **Wilson Stegeman**
1166 Montgomery Drive, Santa Rosa

In Memoriam

ALLEN, ERNEST G. Died in Patterson, September 2, 1954, aged 68, of coronary artery disease. Graduate of the University of California Medical School, Berkeley-San Francisco, 1923. Licensed in California in 1923. Doctor Allen was a member of the Stanislaus County Medical Society.

✤

ALLEN, FREDERICK W., JR. Died in Pacific Beach, August 10, 1954, aged 34. Graduate of the University of Illinois College of Medicine, Chicago, 1944. Licensed in California in 1949. Doctor Allen was a member of the San Diego County Medical Society.

✤

CALLAWAY, JAMES W. Died in La Jolla, June 25, 1954, aged 46, of carcinoma of the pancreas. Graduate of Northwestern University Medical School, Chicago, Illinois, 1932. Licensed in California in 1934. Doctor Callaway was a member of the San Diego County Medical Society.

✤

CASE, ROBERT B. Died in Santa Cruz, August 24, 1954, aged 44, of coronary artery disease. Graduate of Washington University School of Medicine, St. Louis, Missouri, 1937. Licensed in California in 1937. Doctor Case was a member of the Santa Cruz County Medical Society.

✤

COYLE, JAMES D., SR. Died in Sacramento, August 14, 1954, aged 59, of cerebral vascular accident. Graduate of St. Louis University School of Medicine, Missouri, 1921. Licensed in California in 1921. Doctor Coyle was a member of the Sacramento Society for Medical Improvement.

✤

DAGGETT, EARL H. Died in Oakland, September 4, 1954, aged 81. Graduate of the Oakland College of Medicine and Surgery, California, 1909. Licensed in California in 1909. Doctor Daggett was a member of the Alameda-Contra Costa County Medical Association.

✤

HARRISON, ELAKE. Died in San Francisco, September 9, 1954, aged 60. Graduate of Columbia University College of Physicians and Surgeons, New York, 1919. Licensed in California in 1922. Doctor Harrison was a member of the Los Angeles County Medical Association.

✤

HART, ADEN C. Died in San Francisco, August 27, 1954, aged 86. Graduate of Cooper Medical College, San Francisco, 1891. Licensed in California in 1891. Doctor Hart was a retired member of the Sacramento Society for Medical Improvement, the California Medical Association, and an associate member of the American Medical Association.

✤

JOHNSON, MURREY L. Died in Piedmont, August 14, 1954, aged 94. Graduate of Cooper Medical College, San Francisco, 1887. Licensed in California in 1888. Doctor Johnson was a retired member of the Alameda-Contra Costa Medical Association, the California Medical Association, and an associate member of the American Medical Association.

✤

MCCRADIE, ROBERT D. Died in Oakland, August 7, 1954, aged 65, of myocardial infarction. Graduate of the University of Illinois College of Medicine, Chicago, 1920. Licensed in California in 1921. Doctor McCradie was a member of the Alameda-Contra Costa Medical Association.

MESSINGER, HERBERT B. Died in San Francisco, July 29, 1954, aged 53. Graduate of McGill University Faculty of Medicine, Montreal, Quebec, 1931. Licensed in California in 1947. Doctor Messinger was a member of the Napa County Medical Society.

✤

MORRIS, LAIRD M. Died in San Francisco, August 15, 1954, aged 64. Graduate of the University of California Medical School, Berkeley-San Francisco, 1916. Licensed in California in 1916. Doctor Morris was a member of the San Francisco Medical Society.

✤

NAST, ERNEST H. Died in Soquel, August 26, 1954, aged 68. Graduate of the Chicago College of Medicine and Surgery, Illinois, 1914. Licensed in California in 1914. Doctor Nast was a retired member of the Santa Cruz County Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✤

PATTERSON, GILBERT L. Died in Santa Rosa, July 30, 1954, aged 59. Graduate of the University of California Medical School, Berkeley-San Francisco, 1922. Licensed in California in 1922. Doctor Patterson was a member of the Sonoma County Medical Society.

✤

ROADRUCK, R. DAVIS. Died in San Francisco, August 20, 1954, aged 48, of coronary artery disease. Graduate of the University of Nebraska College of Medicine, Omaha, 1933. Licensed in California in 1949. Doctor Roadruck was an associate member of the Sonoma County Medical Society, the California Medical Association, and the American Medical Association.

✤

RUNCKEL, GEORGE H. Died recently in Portland, Oregon, aged 79, of carcinoma of the intestine. Graduate of Cooper Medical College, San Francisco, 1908. Licensed in California in 1908. Doctor Runckel was a retired member of Siskiyou County Medical Society, the California Medical Association, and an associate member of the American Medical Association.

✤

STOCKTON, ANDREW B. Died in Kentfield, September 7, 1954, aged 54. Graduate of Stanford University School of Medicine, Stanford University-San Francisco, 1928. Licensed in California in 1928. Doctor Stockton was a member of the San Francisco Medical Society.

✤

TITUS, CHARLES I. Died in Sacramento, September 7, 1954, aged 78. Graduate of the Denver and Gross College of Medicine, Colorado, 1905. Licensed in California in 1922. Doctor Titus was a life member of the Sacramento Society for Medical Improvement.

✤

WOODWARD, DEAN S. Died in Watsonville, August 7, 1954, aged 68, of coronary artery disease. Graduate of St. Louis University School of Medicine, Missouri, 1914. Licensed in California in 1914. Doctor Woodward was a member of the Santa Cruz Medical Society.

WOMAN'S AUXILIARY
TO THE CALIFORNIA MEDICAL ASSOCIATION

A NEW COMMITTEE added to the Auxiliary program last year was the Committee on Mental Health. Under the chairmanship of Mrs. Leland S. Lewis of Bakersfield, the groundwork was laid in county units of the Auxiliary for programs of self-education on mental health facilities and resources in their respective communities. This year Mrs. Clayton E. Brock of San Jose is state chairman, and the counties are being urged to appoint special committees on mental health.

The American Medical Association reminds us that the number one health problem in America today is the nine million men, women and children who have some form of mental illness. That total is more than the combined total of people stricken with poliomyelitis, cancer and tuberculosis.

* * *

VISITS TO STATE MENTAL HOSPITALS

Three of our county Auxiliaries have been interested in state mental hospitals for several years. Members from Ventura and Santa Barbara pay an annual visit to the Camarillo State Hospital and have luncheon in the hospital ward dining rooms. Members of the nursing staff take them on a tour of the hospital, and as a result the Auxiliary women have a better understanding of the therapy, environment and life of patients in a mental institution.

The Solano County group has made several visits to the California State Mental Hospital at Imola and has had speakers from there at some of its meetings. Part of the proceeds from the Solano County Auxiliary's annual rummage sale goes for occupational therapy supplies for the children's wards at Imola.

* * *

CIVIL DEFENSE PROJECTS

Mr. Joseph Stetler, secretary of the Council on National Emergency Medical Service of the American Medical Association, admits that any program on civil defense meets with apathy in most communities. He has urged the active cooperation and support of the Auxiliary in carrying out the plans and programs of the A.M.A.

Mrs. Louis C. Olker of Chico, chairman of civil defense for the State Auxiliary, has been working in close cooperation with the C.D. office in Sacramento in setting up a program of direct action at the family and neighborhood and community level.

ANOTHER NATIONAL CHAIRMANSHIP FOR CALIFORNIA

Mrs. Raleigh W. Burlingame of San Diego, a past state president, is serving her second term as western regional chairman for the American Medical Education Foundation. Another good reason why our county units must work hard to meet their quota of $1 per member for this worthwhile fund!

* * *

FRIENDLINESS WINS NEW MEMBERS

The Fresno County Auxiliary has a unique and successful plan for promoting friendliness and warm hospitality for its new members. There a "Big Sister" is assigned to each new member and the Big Sister sponsors that member during the whole year. Not only does this plan increase the membership, but it enlists the new members into active participation in the Auxiliary's projects and activities.

The San Mateo County Auxiliary also makes special efforts in welcoming new members. Transportation to the meetings is provided, and when each new member is introduced to the group she receives a corsage while the chairman gives a brief biography of her. Then the new member is immediately assigned to a committee and is made to feel that she is an important member of the Auxiliary.

Mrs. Paul C. Blaisdell of Pasadena, first vice-president, is chairman of Membership and Organization. She points out that when we become Auxiliary members, we enter into active partnership with our husbands in the all-important business of providing our communities with the best possible medical services.

"The rewards of this partnership come from building confidence and greater understanding in our communities between the public and the medical societies; and further reward comes from the fine friendships we build among doctors' wives everywhere, working for the same ideals in the common cause," states Mrs. Blaisdell.

The slogan of the membership committee is "Be a member and get a member." Our ultimate goal is to have every eligible doctor's wife an Auxiliary member. Won't you help us to come a little closer to that goal this year?

MRS. FREDERICK J. MILLER, *President*

NEWS & NOTES

NATIONAL • STATE • COUNTY

ALAMEDA

A grant of $144,473 for continuation of studies on the purification of the poliomyelitis virus, which are being carried on at the University of California Virus Research Laboratory, has been awarded by the National Foundation for Infantile Paralysis. The work is under the supervision of Dr. Wendell M. Stanley, Nobel prize winner, who is director of the Research Laboratory.

LOS ANGELES

The Sixth Annual Scientific Assembly of the **California Academy of General Practice** will be held at the Hotel Statler in Los Angeles, October 24-27, 1954. A total of twenty papers will be presented. Among the speakers are: Robert Greenblatt, M.D., professor of endocrinology, Medical College of Georgia; Carlo Scuderi, M.D., associate professor of surgery, University of Illinois; Walter C. Alvarez, M.D., senior consultant emeritus, department of medicine, Mayo Clinic; Danely P. Slaughter, M.D., director of the tumor clinic, University of Illinois; Hans H. Hecht, M.D., associate professor of medicine, University of Utah; A. E. Hansen, M.D., chairman, department of Pediatrics, University of Texas; and William M. M. Kirby, M.D., associate professor of medicine, University of Washington.

A complete program and reservation information may be obtained by writing to Merlin L. Newkirk, M.D., president, California Academy of General Practice, 461 Market Street, San Francisco 5.

* * *

The California League for Nursing and the Student Nurse Association of California will meet for the second annual convention at the Ambassador Hotel in Los Angeles on October 28, 29 and 30. Highlights of the program will be a symposium on the subject "Community Responsibility and Contribution to Nursing" and a panel discussion on "Professional Nursing Responsibilities" as viewed by a staff physician, hospital administrator, medical educator, patient, student nurse and professional nurses from various fields.

* * *

A new speech and hearing clinic has begun operation on the Los Angeles campus of the College of Medical Evangelists as a part of the White Memorial Clinic. Designed to provide treatment for all types of speech disorders, this new service will be under the direction of Charles D. Shopwin, M.A., speech pathologist. It will also serve as a diagnostic and rehabilitation center.

SAN FRANCISCO

Seminars sponsored by the Medical Alumni Committee of Children's Hospital will be presented again in 1954-55. All-day sessions will be held at the hospital on selected Saturdays during the fall and winter, each beginning at 9:30 a.m. Dates and subjects are:

October 23—Hematology, with special emphasis on etiology, diagnosis and treatment of commonly encountered anemias.

December 4—Orthopedic problems of infancy and childhood; early detection and management.

January 22—The management of metabolic disturbances commonly encountered in practice.

February 26—The allergic dilemma.

March 26—Infections and their management.

Members of the American Academy of General Practice may apply the course against the Academy's requirement of accredited study.

A fee of $15 for the series of five or $5 for a single seminar will be charged. Inquiries may be addressed to: Gertrude F. Jones, M.D., chairman, Medical Alumni Committee, Children's Hospital, 3700 California Street, San Francisco 18.

GENERAL

The National Foundation for Medical Education recently made grants in aid of medical education, totaling $110,060, to four California medical schools.

The awards were as follows: Stanford University, $26,860; University of California, $24,958; University of Southern California, $24,598; and College of Medical Evangelists (Los Angeles), $33,643.

The grants were among 80 the nation over made by the National Fund for a total of $2,176,904.

S. Sloan Colt, president of the Fund, said that added to these grants were gifts of individual physicians to specified medical schools. Mr. Colt explained that business corporations contribute through the National Fund's committee of American Industry, while the doctors contribute through the American Medical Education Foundation, set up by the American Medical Association.

With the latest grants, the total grants since 1951 add up to: Stanford, $84,537.92; California, $82,702.34; USC, $80,337; and College of Medical Evangelists, $98,436.

* * *

The fortieth annual Clinical Congress of the American College of Surgeons will be held in Atlantic City, New Jersey, November 15 to 19.

* * *

The nineteenth annual convention of the National Gastroenterological Association and the first annual convention of the American College of Gastroenterology will be held at the Shoreham in Washington, D. C., on October 25, 26 and 27, 1954. Copies of the program may be obtained by writing to: National Gastroenterological Association, 33 West Sixtieth Street, New York 23, N. Y.

* * *

Dr. Arthur R. Twiss, of Oakland, past president of the Alameda County Heart Association, was elected president of the **California Heart Association** at its annual meeting held in Santa Barbara, June 5-6. Attendance at the meeting, the first held independently by the organization, was 150 persons. Previously the Heart Association had held its annual meetings at the time and place of the annual sessions of the California Medical Association.

Other officers elected were: vice-president, Dr. Frederick Kellog of Long Beach; secretary, Dr. George K. Wever of Stockton; and treasurer, Mr. Daniel G. White of San Francisco.

POSTGRADUATE EDUCATION NOTICES

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Fall schedule:

Application of Principles of Industrial Medicine to Private Practice—October 13 to December 8, 1954.

Anesthesiology—November 4 to 5, 1954.

Dermatology in General Practice—November 10 to December 15, 1954.

In Riverside:

Problems in Anesthesia—October 20, 1954.

In Long Beach:

Cardiology—November 4, 11, 18, 1954.

Office Gynecology—January 6, 13, 20, 1954.

Contact: Mrs. Margaret H. Griffith, Assistant Head of Postgraduate Instruction, Medical Extension, University of California, Los Angeles 24, California.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Symposium on Endocrine Diseases and Geriatrics

Date: October 22, 23, 24 (week-end), University of California Extension Building, 540 Powell Street, San Francisco. A review of recent developments in both fields, with suggestions for the management of patients past the age of fifty.

Contact: Stacy R. Mettier, M.D., Head of Postgraduate Instruction, Medical Extension, University of California Medical Center, San Francisco 22, California.

CALIFORNIA MEDICAL ASSOCIATION, POSTGRADUATE ACTIVITIES

A Circuit Course of Postgraduate Lectures will be given in the Sacramento Valley cities of Dunsmuir, Chico, Marysville, and Auburn, during the fall months of 1954. Lecturers are from the faculty of Stanford University Medical School. The weeks of November 1 to 4, Selected Topics in Obstetrics and Gynecology, Dr. Lyman Stowe; November 15 to 19, Antibiotics, Dr. Lowell A. Rantz; December 6 to 9, Practical Problems in Clinical Endocrinology, Dr. Francis Greenspan.

A Circuit Course of Postgraduate Lectures will be given during the fall months of 1954 in the North Coast County cities of Eureka, Ukiah, Woodland and Napa. Lecturers are from the faculty of the University of California School of Medicine. The weeks of November 1 to 4, Use of Drugs for Hypertension, Dr. Alvan Hambly; November 15 to 18, Neurosurgical Problems as the Result of Accident; December 6 to 9, Practical Diagnosis and Treatment of Cardiac Arrhythmias, Norman J. Sweet.

Contact: C. A. Broaddus, M.D., Director of Postgraduate Activities, P.O. Box AI, Carmel, California.

Medical Dates Bulletin

THIS BULLETIN of the dates of postgraduate education assemblies and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to: C. A. Broaddus, M.D., P.O. Box AI, Carmel, California.

OCTOBER

San Diego County Heart Association, Annual Professional Symposium on Heart Disease, Friday, October 15, H. Jack Hardy, executive director, 1651 Fourth Avenue, San Diego 1.

California Academy of General Practice, Sixth Annual Scientific Assembly, Los Angeles, October 24, 25, 26, 27, Wm. W. Rogers, executive secretary, 461 Market Street, San Francisco.

Orthopaedic Hospital, Comprehensive Five-day Course in Poliomyelitis, October 25 to 29, 1954, C. L. Lowman, M.D., 2400 S. Flower Street, Los Angeles 7.

NOVEMBER

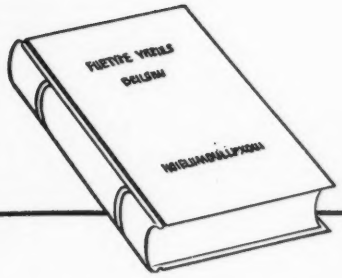
Los Angeles Urologic Research Convention, Los Angeles, November 8-12.

JANUARY

American College of Surgeons, Palm Springs, January 21-22, 1955.

CALIFORNIA MEDICAL ASSOCIATION, Annual Session, San Francisco, May 1-5, 1955.

AMERICAN MEDICAL ASSOCIATION
Clinical Session, 1954, Miami, November 30-December 3.
Annual Session, 1955, Atlantic City, June 6-10.
Clinical Session, 1955, Boston, November 29-December 2.



THE PHYSICIAN'S *Bookshelf*

LUNG CANCER. Seymour M. Farber, M.D., Associate Clinical Professor of Medicine, U. C. School of Medicine. Charles C. Thomas, publisher, Springfield, Ill., 1954. 157 pages, $4.75.

There is no doubt that the problem of lung cancer is increasing, and that it is already at a point where it offers a challenge to the general practitioner. In an attempt to help him meet that challenge, Dr. Farber has prepared this monograph. It begins with a simple, lucid explanation of the current concepts of etiology and histopathology, and proceeds to an excellent discussion of the attitude with which the problem should be faced, and the essential features of diagnosis which should be employed by the physician in searching for possible lung cancer, which is symptomatic. Unfortunately, nothing is said about the techniques for discovering the so-called "silent" lesion which is either nonsymptomatic or only vaguely so. It is true that later on in the monograph the author does speak of the possibility of using sputum examinations for malignant cells as a possible survey technique, but does *not* speak of the use of periodic x-rays for that purpose.

There is a very good section on the use of the fluoroscope and roentgenology in diagnosis, although one wonders from whence comes the author's enthusiasm for bronchography. Most diagnosticians find it only occasionally helpful in searching for a lung cancer and hesitate to use it because of the residual iodized oil which obscures further x-ray studies.

The section on cytological studies is, of course, excellent, since the author is an authority in that field. Also commendable is his advice to the physician concerning the care of the patient whose disease has progressed to a point where no therapy, either surgical or otherwise, can be used. Only the chapter on surgery is inadequate, and this inadequacy may be due to the "autopsy table" background of the author's material. This material consists of 1070 cases from 19 California hospitals, 61 per cent of whom were undiagnosed before autopsy. His surgical background appears to be limited to a review of 241 surgical cases, only 26 of whom were from private hospitals or physicians. The value of this monograph to the general practitioner would have been considerably enhanced had the author presented a fairer and less pessimistic appraisal of the role which surgery can play in the therapy of cancer of the lung. This might have been done had the author sought the collaboration of an experienced thoracic surgeon in preparing the chapter on surgery.

The book can be unhesitatingly recommended to those physicians who share the author's philosophy regarding cancer of the lung, which is well described in the introduction by J. Arthur Myers in the following words: "Although he recognizes that the only successful treatment of cancer of the lung today is surgical extirpation, the author, like many other workers in this field, has a deep conviction that further treatment of pulmonary cancer will be with drugs."

MICROBIOLOGY AND PATHOLOGY—Fifth Edition. Charles F. Carter, B.S., M.D., Director, Carter's Clinical Laboratory, Dallas; and Alice L. Smith, A.B., M.D., Assistant Professor of Pathology, Southwestern Medical College of the University of Texas. The C. V. Mosby Co., 1953. 847 pages, 260 illustrations, $5.50.

This fifth edition of a combined book on Microbiology and Pathology grew out of an earlier edition on "Bacteriology for Nurses" first printed in 1928. The first 463 pages of the total 810 pages of text cover admirably, in 35 chapters, fundamentals of bacteriology, parasitology and immunology in an exceptionally interesting manner. At the end of each chapter is printed a set of questions concerning the material covered. The content is completely up-to-date and includes a good description of the common antibiotics and an excellent description of the action of various chemicals used as disinfectants. Particularly useful and well done is the discussion of the practical methods of sterilization and disinfection as conducted by nurses and physicians in everyday hospital and office practice. Lucid discussion of immunological problems makes easy reading of a usually dull subject. Information concerning the morphology, cultural characteristics, manner of infection and control of disease caused by pathogenic bacteria, fungi and animal parasites is presented in a fashion so readable that your reviewer was loathe to lay down the book until he had finished this portion. Medical students, and physicians as well as nurses, can gain a mint of up-to-date information in these chapters. Excellent chapters cover viruses and Rickettsia and diseases caused by them. The final chapter of this well-written first part is a summary of the method of inoculation to prevent disease as recommended by the American Public Health Association and the American Academy of Pediatrics.

The second part of the book is another attempt to present to nurses fundamentals of general and special systemic pathology. This portion compares favorably with other books on the market but fails somehow to have the authority of the first part of the volume. The illustrations are nearly all taken from other books. Many represent advanced lesions seldom seen in this day and age. On a whole, the material presented in an orthodox fashion is factual but occasionally one reads a statement which is not true—such as "Gallstones are of frequent occurrence in the feces." Most of the text, however, is quite satisfactory. A handy glossary of terms which takes up fully 28 pages concludes the book.

This well-printed book should serve satisfactorily as a very useful text for nurses and others studying microbiology or fundamentals of pathology.

* * *

BABIES NEED FATHERS TOO. Rhoda Kellogg. Comet Press Books, 11 West 42nd St., New York 36, 1953. 256 pages, $3.50.

Rhoda Kellogg states that she was prompted to write this book because every day she hears complaints from mothers of nursery school children that their husbands will not read any books on child psychology. Because it is her conviction that children from birth on need fathers who are as close

and real as their mothers, and that American children generally need more fathering, she has attempted in this book "to give the busy man a chance to catch up with his wife's latest notions and develop some that may be new to her."

Mrs. Kellogg is the director of the Golden Gate Nursery Schools in San Francisco. Her book clearly shows that she not only is familiar with modern theories and knowledge concerning the development and socialization of children, but that she herself has had extensive experience with preschool children. In addition to this, the book is simply and interestingly written.

The book begins with a discussion of the role of the father in family living, attempting to give him a deeper understanding of the significance of present day father-mother and parent-child relationships. It also attempts to contribute to his understanding of his children's feelings and behavior by directing his thoughts back into his own early life and analyzing the source of his own feelings in his early relationships to his parents. The book then goes on to describe from the dynamic standpoint, the development and behavior of the child at his various stages of development, giving, as it goes along, not only the theoretical background necessary to understand what is taking place and why, but also drawing conclusions and giving advice. The latter half of the book consists of chapters on such subjects as the problems of the first child, those of the second, sex education, "Why Children Misbehave," "Why Children Get Sick," the proper choice of toys, and "How Fathers Can Correct Their Mistakes" and "Rate Themselves."

It is the reviewer's opinion that any thoughtful, psychologically oriented father who is interested in playing an effective role in the upbringing of his children will find this book stimulating, illuminating, and helpful. Doubtless, as the author recognizes, it will arouse strong negative feelings in some men, and some will disagree with many of its premises and conclusions. Probably most fathers who have had no psychological orientation should, after reading the book, have an opportunity to deal with their aroused feelings through individual or group discussions with child guidance trained personnel.

* * *

THE CHILD, HIS PARENTS AND THE PHYSICIAN. Hale F. Shirley, M.D., Professor of Pediatrics and Psychiatry, Director of the Child Psychiatry Unit, Stanford University School of Medicine, Charles C. Thomas, publisher, Springfield, Illinois, 1954. 159 pages, $3.75.

This monograph is a very readable presentation of material presented in recent years by the author to medical students, members of the pediatrics house staff, general practitioners and pediatricians on the emotional growth and behavior of the normal child. In it he presents in simple and nontechnical language those basic concepts which he feels are essential to an understanding of the child and his social adjustment.

Simple diagrams are employed to graphically illustrate many of the concepts. In a chapter on developmental goals, summary tables for each stage from infancy through late childhood nicely condense the main points of the discussion.

The book is especially suited to the physician who has not had intensive training in child guidance, but whose everyday practice brings him in contact with situations requiring a comfortable orientation in that field. It is also considered suited to teachers, nurses and many parents.

* * *

ACUTE PULMONARY EDEMA. Mark D. Altschule, M.D., Assistant Professor of Medicine, Harvard Medical School. Grune & Stratton, Inc., New York, 1954. 68 pages, $3.50.

This excellent, brief work consists of a review of the clinical manifestations, basic physiologic considerations, pathologic physiology and treatment of acute pulmonary edema. Inadequacies of the widely held concept that this state is principally a sequel of left ventricular failure are explored. An adequate index and bibliography are included. This monograph should find wide acceptance.

* * *

THORACIC SURGERY — Second Edition. Richard H. Sweet, M.D., Associate Clinical Professor of Surgery, Harvard University Medical School. Illustrations by Jorge Rodriguez Arroyo, M.D., formerly assistant in surgical therapeutics, University of Mexico Medical School. W. B. Saunders Company, Philadelphia, 1954. 381 pages, $10.00.

This book takes up in an orderly, easily-read style the accepted surgical procedures which can be performed in or through the thorax. The illustrations are excellent and omit much of the confusing and unnecessary detail found in other texts. Pre- and postoperative care and technique are covered with a minimum of stress on indications or contraindications. The general surgeon who might occasionally find himself forced to enter the chest would find this a very valuable reference. The intern or resident interested in thoracic surgery will find this text to be of great assistance to him in understanding the anatomy and to a lesser degree the physiology of the thorax and to enable him to follow the technique of the standard thoracic procedures.

The thoracic surgeon probably will benefit very little from this text in that it has a rather wide scope with a minimum of detailed description of those techniques which are not already standardized, well known, and treated in more adequate detail elsewhere in the medical literature.

* * *

LECTURES ON THE THYROID. J. H. Means, M.D., Jackson Professor of Clinical Medicine, Professor Emeritus, Harvard University. Harvard University Press, Cambridge, 1954. 113 pages, $3.00.

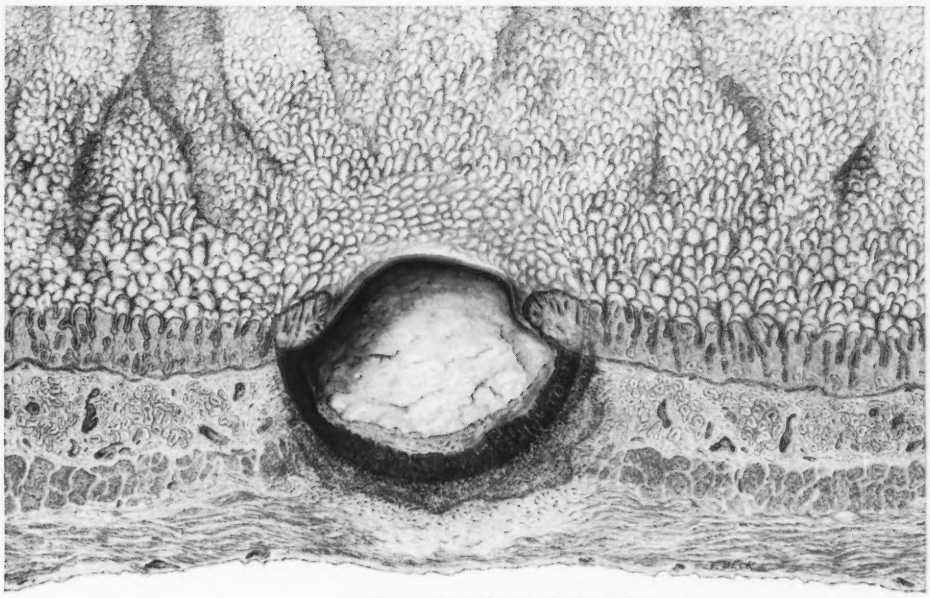
This neat volume is a collection of five lectures on the thyroid given by Dr. Means at various times and places. No one is more qualified to survey the subject than Means, whose work as head of the thyroid clinic at the Massachusets General Hospital for many years is known and admired by all. These lectures are in a sense a summary of Dr. Means' credo; one can see how they have developed as a result of infinite thought on the subject. Beginning with the wide sweep of the integrative action of the endocrine system we go on to the thyroid hormone and then to more clinical matters of thyroid disease. The whole subject is developed with historical sense which Dr. Means can so well do, having, as it were, lived through most of it. This small volume serves as an excellent supplement to Means' large book on the thyroid so well known to all.

There is an index and a number of interesting diagrams.

* * *

THE BIOCHEMISTRY OF CLINICAL MEDICINE. William S. Hoffman, Ph.D., M.D., Professorial Lecturer in Medicine, University of Illinois College of Medicine. The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, 1954. 681 pages, $12.00.

This represents a thorough exposition of chemistry as this science is related to the problems of medicine, an approach which reminds one of certain volumes on clinical or pathologic physiology; the present work does not suffer by such a comparison. The author has had particular experience in the fields of diabetes mellitus, renal disorders, hepatitis and gout; the pertinent sections are extensive. Contents are well arranged and the book well published, with satisfactory index and references. One may safely predict a good reception and many editions.



Cross section of active duodenal ulcer.

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1. Ruffin, J. M.; Baylin, G. J.; Legerton, C. W., Jr., and Texter, E. C., Jr.: Mechanism of Pain in Peptic Ulcer, Gastroenterology *23*:252 (Feb.) 1953.
2. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: A Clinical Evaluation of a New Anticholinergic Drug, Pro-Banthine, Gastroenterology *25*:416 (Nov.) 1953.

Emotional First Aid Needed in Disasters

You don't have to be a psychologist to give needed first aid to "emotional casualties" of a community disaster. Knowledge of a few basic rules is all that's necessary to give first aid to a physically injured disasier victim. The same is true of persons who react badly to the emotional shock of a disaster, according to the Committee on Civil Defense of the American Psychiatric Association. Its material on psychological first aid appeared in a recent issue of the *Journal of the American Medical Association.* The first need is to understand and control your own emotions and to know your abilities and limitations, so you will be in a position to help others. Then you must "accept every person's right to have his own feelings," however strange they may seem. Your job is to help the victim cope with his feelings, not to tell him how he should feel.

A casualty's emotional limitations are as real as physical ones. They must be taken into consideration, but his potentialities also must be sized up and given a chance to work.

"Unlike ordinary life, a disaster engenders more urgent jobs than there are people to do them. Opportunities to regain self-respect and self-confidence are correspondingly greater," the article said. "Psychological first aid can help many emotionally disturbed victims to take advantage of these opportunities and thereby get back into their stride."

Here are the major kinds of emotional reactions and ways to deal with them:

1. Normal: Most people show some "signs of disturbance" which are only natural. A word of encouragement in passing is worth while.

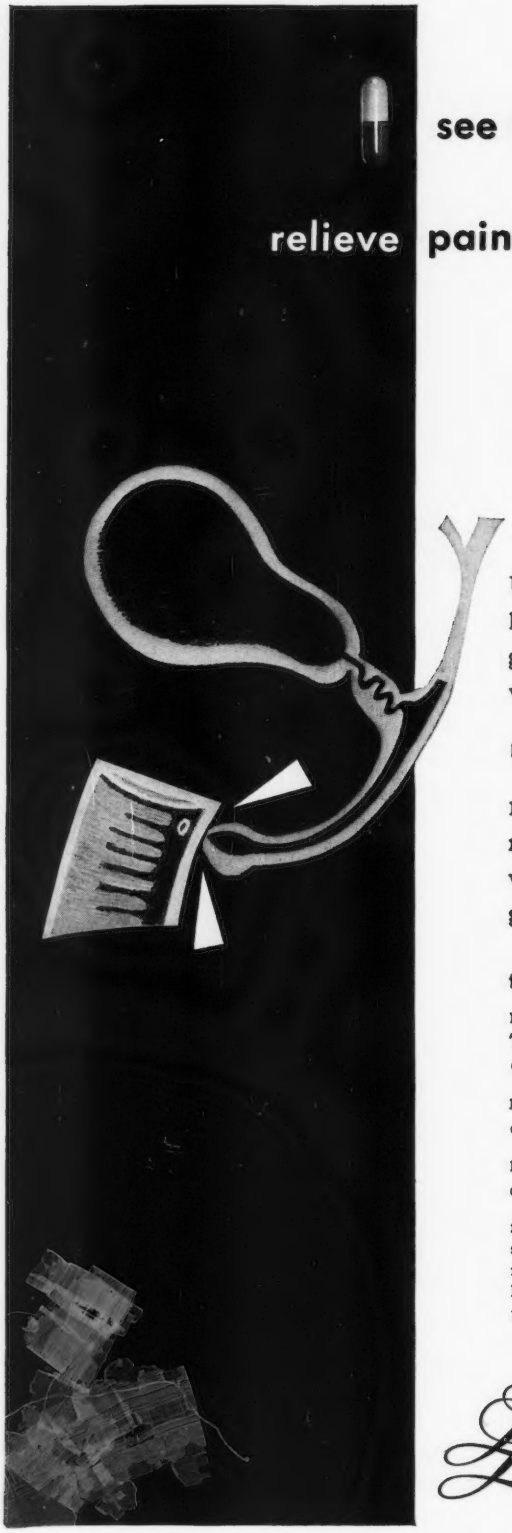
2. Individual panic: Some lose control and rush pointlessly about, and a few such persons may set off dangerous mass panic. Gentle firmness should be tried first, then firm but not brutal physical restraint. The committee debunked "the widespread belief that a casualty in panic can be jolted out of his confusion by slapping him in the face, by dousing him with cold water, or by other forms of abuse."

3. Depressed: Some persons seem to be numbed, to lose contact with the world. A few minutes talking with them, showing a real personal interest, and suggesting simple tasks to bring them back to reality will help.

4. Overly active: The man who suddenly "takes over," issues orders, and rushes from job to job without organization can hamper those who are more reliable. Giving this man a heavy job to work off physical energy, and getting him under proper supervision will help calm him.

5. Bodily reactions: An emotionally upset person "unconsciously may convert his great anxiety into a strong belief that some part of his body has ceased to function." He must be treated with consideration for his disability, made to feel you are interested, and given small jobs so he can regain composure gradually while awaiting medical help.

(Continued on Page 66)



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VAGINAL ANATOMY AND CONCEPTION CONTROL

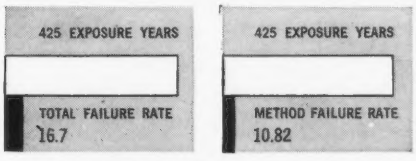
Another observation based on 425 patient years of exposure

According to a recent comparative study by Guttmacher and co-workers,[1] vaginal anatomy and parity apparently play important roles in the selection of a contraceptive method. Using the jelly-alone method, they found that markedly greater protection was afforded to women of low parity, and suggested that the jelly "might be confined to the region of the external os more successfully in the less relaxed vagina."

Of 325 women who used the jelly-alone [RAMSES® VAGINAL JELLY] technic for periods ranging from three months to three years, 36 percent were primiparous. The statistically valid data, based on 425 patient years of exposure, definitely indicate that the jelly-alone method of contraception was considerably more effective "among patients of lower parity."

The use of jelly alone as a contraceptive measure proved highly successful in the entire group, and only a few unplanned pregnancies occurred. These were either considered as (1) patient failures, comprising those instances in which the patient admitted complete omission or irregular use of the jelly, or as (2) method failures, where the patient claimed regular and careful use of the jelly.

The total unplanned pregnancy rate averaged only 16.7 per 100 patient years of exposure. If method failures alone are calculated, the unplanned pregnancy rate was reduced to 10.82 per 100 patient years of exposure.



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It is apparent from this study that RAMSES VAGINAL JELLY is markedly effective in the jelly-alone technic, and that it is a "method of choice" for most nulliparous and primiparous patients.

Anatomic considerations, however, should not be the sole criteria used in the selection of a contraceptive method. Such factors as patient intelligence and cooperation, as well as the sincere desire for conception control, are also of paramount importance. Thus, the choice of method must, in the end, depend upon the physician's evaluation of the individual patient.

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1. Finkelstein, R.; Guttmacher, A., and Goldberg, R.: Am. J. Obst. & Gynec. 63:664, Mar., 1952.

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Describes Health Behind Iron Curtain

(Continued from Front Advertising Section, Page 46)

Commenting on the report, Dr. George F. Lull, secretary and general manager of the A.M.A., said the facts stand as warning evidence to anyone who thinks state or "socialized" medicine can possibly benefit either physician or patient.

"The physician under this system inevitably must compromise his scientific integrity and his concern for the patient as an individual," Dr. Lull said. "The patient becomes a statistic. The result can be nothing but continuing declining health standards."

Nelson's report said that when the A.M.A. solidly endorsed the 1954 Crusade for Freedom drive "it no doubt had in mind the plight of its iron curtain colleagues and realized the necessity for keeping alive their determination to be free once more, a determination that can do much to unsettle the Soviet position in the captive states and thus avoid a third world war."

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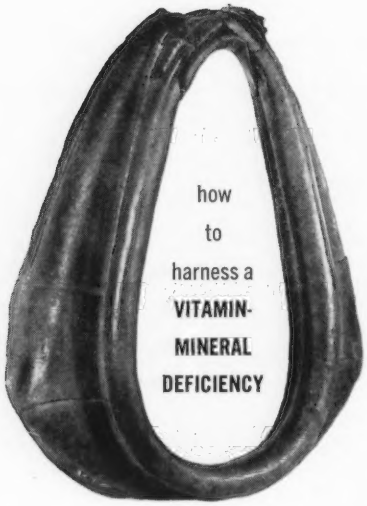


Each Capsule contains
***9 Vitamins* and**
12 Minerals

Vitamin A . . . 25,000 Units
Vitamin D . . . 1,000 Units
Vitamin B_1 . . . 10 mg.
Vitamin B_2 . . . 5 mg.
Vitamin B_6 . . . 0.5 mg.
Vitamin B_{12} . . . 3 mcgm.
Vitamin C . . . 150 mg.
Niacinamide . . . 150 mg.
Calcium Pantothenate . . . 5 mg.
Intrinsic Factor . . . 2 mg.
Iron . . . 10 mg.
Iodine . . . 0.15 mg.
Copper . . . 0.1 mg.
Manganese . . . 0.1 mg.
Magnesium . . . 2 mg.
Potassium . . . 2 mg.
Cobalt . . . 0.1 mg.
Nickel . . . 0.05 mg.
Fluorine . . . 0.33 mg.
Boron . . . 0.2 mg.
Molybdenum . . . 0.2 mg.
Zinc . . . 0.1 mg.

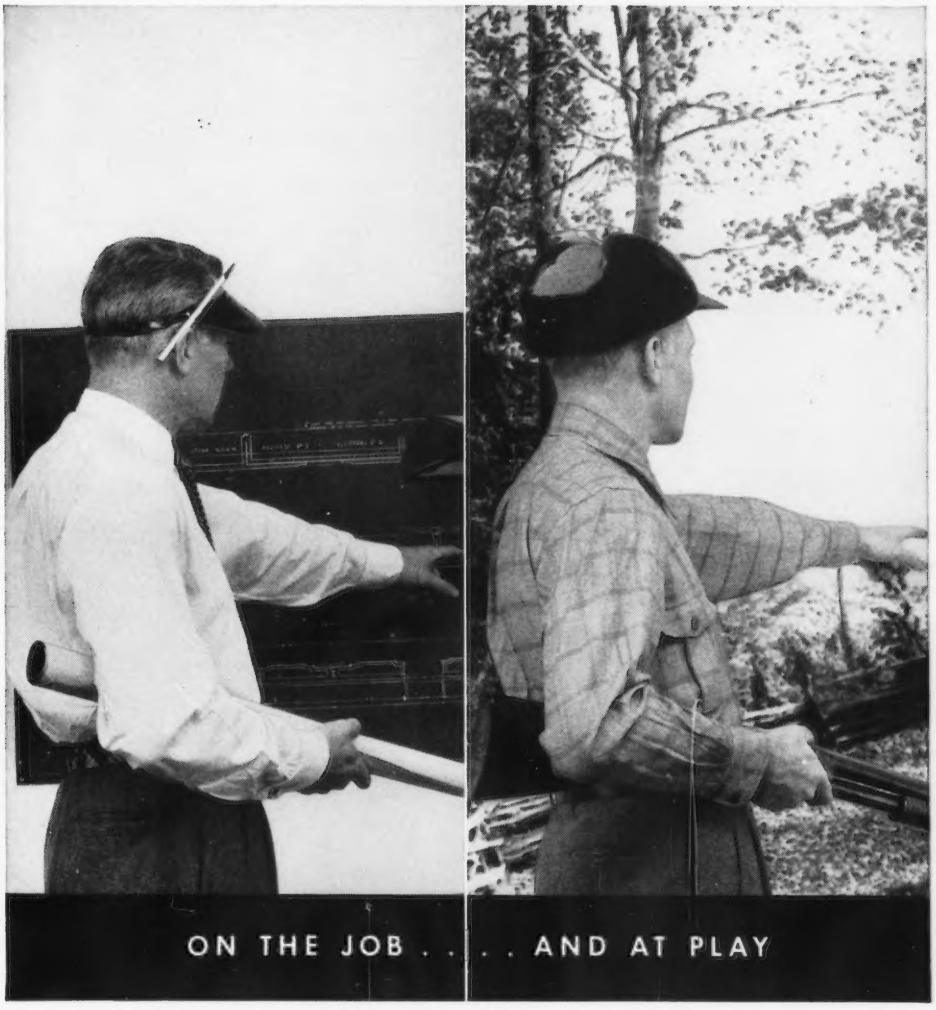
Packaged in bottles of 50 and 100 capsules

VITAREX the Improved
Therapeutic Formula for High Level
Vitamin-Mineral Therapy

VITAREX brings to the profession the essential vitamins in a more complete therapeutic formula containing twelve minerals, Vitamin B_{12} and the intrinsic factor concentrate for better assimilation of Vitamin B_{12}.

Indicated for use in the management of vitamin and mineral deficiencies

PASADENA RESEARCH
LABORATORIES, INC.
2107 E. Villa St., Pasadena 8, Calif.



Gratifying relief from distressing urinary symptoms

PYRIDIUM®

(PHENYLAZO-DIAMINO-PYRIDINE HCL)

In a matter of minutes, PYRIDIUM reaches the site of inflammation with a soothing local analgesic action that brings prompt comfort to patients suffering from the pain, burning, frequency and urgency of urinary infections.

PYRIDIUM is compatible with sulfonamides and antibiotics and may be administered concomitantly to provide a dual therapeutic approach embracing symptomatic relief and anti-infective action.

SUPPLIED: 0.1 Gm. (1½ gr.) tablets, in vials of 12 and bottles of 50, 500, 1000.

PYRIDIUM *is the registered trade-mark of Nepera Chemical Co., Inc. for its brand of phenylazo-diamino-pyridine HCl. Sharp & Dohme, Division of Merck & Co., Inc., sole distributor in the United States.*

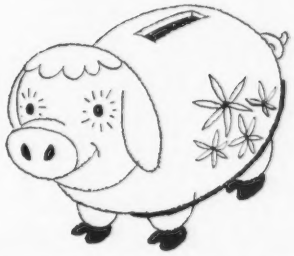
SHARP & DOHME
Philadelphia 1, Pa.
Division of MERCK & CO., INC.

FOR ALL INFANT FEEDING

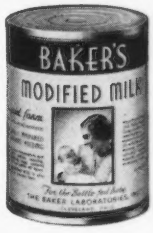
Baker's Modified Milk

FILLS THE NEED FOR...

Economy



Simplicity



+ H_2O

Quality

MADE FROM GRADE A MILK

Baker's Modified Milk is made from Grade A Milk (U. S. Public Health Service Milk Code), which has been modified by replacement of the milk fat with animal and vegetable oils and by the addition of carbohydrates, vitamins and iron.

BAKER'S MODIFIED MILK

THE BAKER LABORATORIES INC.

Milk Products Exclusively for the Medical Profession

Main Office: Cleveland 3, Ohio
Plant: East Troy, Wisconsin

Division Offices: Atlanta, Dallas, Denver, Greensboro, N. C., Los Angeles, San Francisco, Seattle

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

Three Unusual Operations Near Heart Described

(Continued from Front Advertising Section, Page 50)

for the blood while a vessel is being cut have had limited application, they said.

Relief has long been sought for patients suffering gradual closure of a blood vessel like the New York patient, Drs. Cranston W. Holman and Israel Steinberg said. Although they have had only a short time to observe the patient since the operation, they said, grafting to replace the stopped-up vessel seems to be "a satisfactory method" and is worth further trial in these cases.

Emotional First Aid Needed in Disasters

(Continued from Page 54)

Medical care always should be sought for serious emotional casualties, but the goal of "first" aid is to control panic, "restore moderately disabled persons to reasonably good function in a short time or to make the more serious casualties as comfortable as possible until more complete care can be arranged for them."

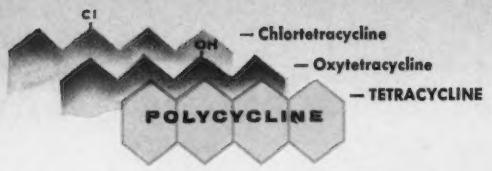
The material was prepared by Drs. Calvin S. Drayer, Philadelphia; Dale C. Cameron, Washington; Walter D. Woodward, New York City, and Albert J. Glass, U. S. Army.

Thoroughbreds are born, not made—

FROM THE ENGRAVING "IRISH BIRDCATCHER" BY J. HARRIS. LONDON. PUBLISHED 1853 BY BAILY BROTHERS.

POLYCYCLINE *is the* ONLY *tetracycline produced directly by fermentation from a new species of Streptomyces isolated by Bristol Laboratories . . . rather than by the chemical modification of older antibiotics.*

The most modern Broad-Spectrum Antibiotic



POLYCYCLINE
CAPSULES
(TETRACYCLINE *Bristol*)

— 100 mg., bottles of 25 and 100.
— 250 mg., bottles of 16 and 100.

POLYCYCLINE
TRADE MARK (TETRACYCLINE *Bristol*)

—the only tetracycline produced directly by fermentation from a new species of Streptomyces isolated by Bristol Laboratories... rather than by the chemical modification of older broad-spectrum antibiotics.

effective in broad range
against gram-positive and gram-negative organisms.

less toxic
(lower incidence of side reactions) than older broad-spectrum antibiotics.

more soluble
than chlortetracycline (quicker absorption, wider diffusion).

more stable in solution
than chlortetracycline or oxytetracycline (higher, more sustained, blood levels).

— the ONLY oral suspension of tetracycline that is **ready-to-use.** Requires no reconstitution, no addition of diluent, **no refrigeration** — stable at room temperature for 18 months. Has appealing "crushed-fruit" flavor. Supplied in bottles of 30 cc., in concentration of 250 mg. per 5 cc.

POLYCYCLINE SUSPENSION 250
(TETRACYCLINE *Bristol*)

Dosage: average adult, 1 gram daily, divided doses; children in proportion to body weight.

Bristol
LABORATORIES INC.
SYRACUSE, NEW YORK

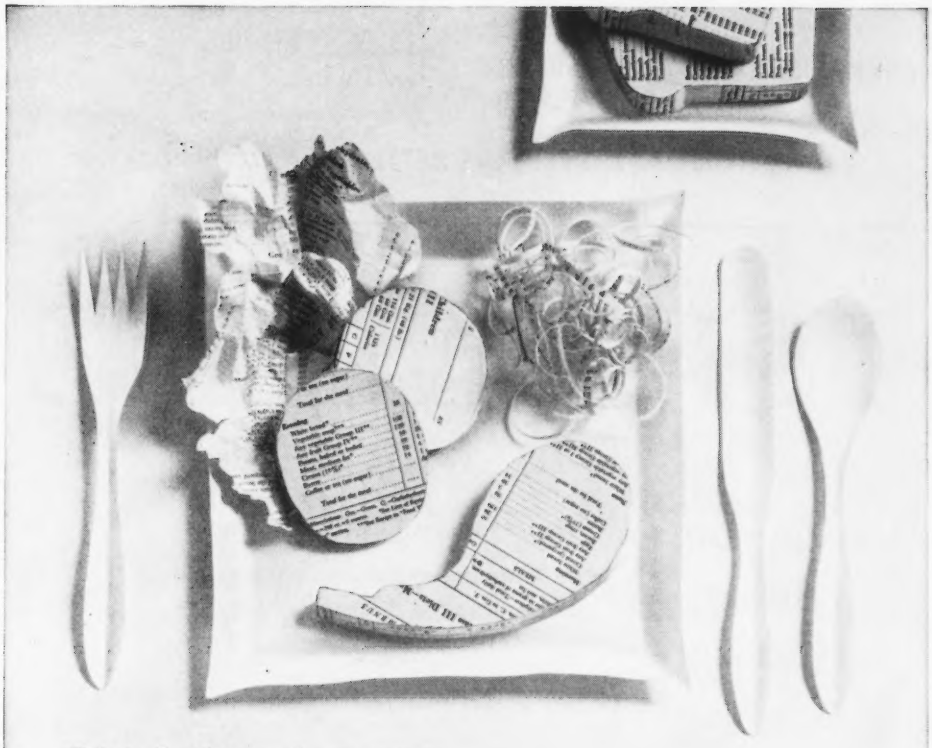
When you think of Tetracycline, think of POLYCYCLINE

California Gives $100,000 to American Medical Education Foundation

A $100,000 gift from the California Medical Association was received recently by the American Medical Education Foundation. Mr. John Hunton, executive secretary of the association, said that the donation represents a treasury grant of the C.M.A. and brings California's total income for 1954 to $117,230, including contributions to A.M.E.F. from 255 individual California physicians. This gift elevates California to second place in state income standings of A.M.E.F. committees.

New Record for *Today's Health*

With the October issue, *Today's Health* will reach a circulation of over 340,000 copies, which is the highest circulation figure in its 31-year history as *Hygeia* or under its present title. A substantial part of this increase in circulation is due to the diligent efforts of the Woman's Auxiliary to the American Medical Association and their subscription projects at the national, state, and local county level. The Woman's Auxiliary has devoted a great deal of their program to the promotion of subscriptions, because they recognize that the magazine can fulfill its purpose only when it reaches the persons for whom it is written.



Diets look good on paper

but patients eat food!

It's easy to prescribe a diet . . . and it will be just as easy for patients to follow one, if Ac'cent is recommended with the diet.

Ac'cent brings out the *natural* flavors of foods, and patients will find that it makes the most bland food taste-stimulating and palatable. Even in foods that are held for a long period of time, Ac'cent retains the true delicious flavors.

Ac'cent is 99+% pure monosodium glutamate, in crystal form, obtained from natural food sources. It is not a synthetic chemical, and it is nontoxic. Ac'cent contains 12.3 per cent of sodium. Ac'cent is not a salt substitute, but it will make foods more flavorful. Include Ac'cent in your special diets . . . "finicky eaters," too, will find it makes foods taste better . . . it is available at neighborhood food stores.

May we send you a brochure on **Ac'cent**

(99+% pure monosodium glutamate)

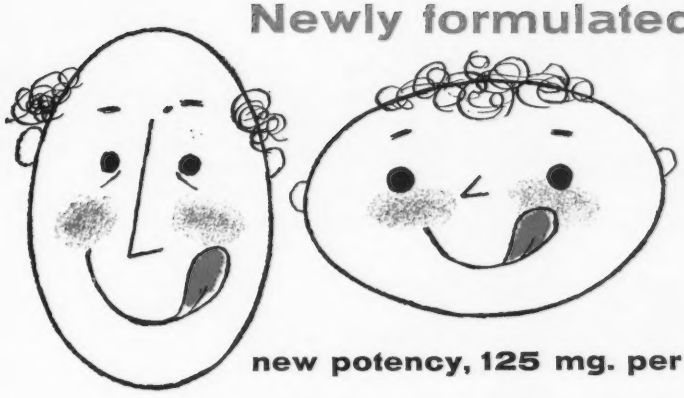
makes good food and good cooking taste better!

Accepted for Advertising in Publications of the American Medical Association

Amino Products Division, **International Minerals & Chemical Corp., Chicago 6, Ill.**

AC'CENT, T.M. Reg. U. S. Pat. Off.

Newly formulated



new potency, 125 mg. per 5 cc.,

for dosage convenience–

plus good taste during and after

*Tetracyn** BRAND OF TETRACYCLINE

oral suspension

(CHOCOLATE FLAVORED)

Uniquely palatable dosage form for the treatment of a wide range of common infections with the newest broad-spectrum antibiotic, distinguished for unsurpassed tolerance and rapid efficacy.

newly formulated to assure maximum cooperation in your dosage regimens, for chocolate flavor is universally regarded as a favorite of young and old.

newly formulated for further convenience in dosage for patients, young and old alike—each teaspoonful of new Tetracyn Oral Suspension contains *125 mg.* of tetracycline. Dosage is easily adjusted for the smallest or largest patient.

Tetracyn Oral Suspension (chocolate flavored) is supplied in a 2 oz., silicone-treated, "drain-free" bottle containing 1.5 Gm. of Tetracyn. When reconstituted, the chocolate-flavored suspension supplies *125 mg.* of tetracycline in each palatable teaspoonful (5 cc.).

PFIZER Rx

536 Lake Shore Drive, Chicago 11, Illinois

ETHICAL PHARMACEUTICALS FOR NEEDS BASIC TO MEDICINE

*TRADEMARK

Contact Lenses Can Be Worn by Most Seekers

Two-thirds of those who want the new contact or corneal lenses—even just for appearance—can wear them safely, two New York City physicians stated recently.

The lenses "should be obtained only through qualified eye doctors who will ethically advise their use only when careful study and examination prove their need and indicate they may be used," Drs. Maurice W. Nugent and Conrad Berens wrote in a recent issue of *Today's Health* magazine, published by the American Medical Association.

The newest of these invisible lenses is the corneal lens, which is much smaller than a dime and covers only the cornea, or transparent covering of the pupil and iris. The contact lens has a central portion over the cornea and a flange extending out over the sclera, or white part of the eyeball.

The latest lenses can be worn without fluid, which was a stumbling block to earlier type of lenses. The only real hazard in the new lenses is corneal abrasion. However, they said, the minute rubbed spots heal quickly by themselves when the lenses are taken off for a while.

Persons who can wear the lenses include first those who because of accident or disease cannot see well with spectacles; those who have had cataracts removed and find lenses more satisfactory than spectacles, and those who wish them for appearance only. Once this last group was not considered, but now it makes up the largest part of all wearers.

There is no real danger in contact or corneal lenses if the patient will accept the advice of his qualified eye doctor, who examines for disease and eye muscle disorder, and accurately measures for the best type of lens. Then he supervises the important training period during which the patient learns to relax his eyelids and tolerate longer wearing periods.

About a third of all persons fitted cannot tolerate the lenses at all. Another third can wear them for special purposes for limited times—such as actors while on stage. The last third is "the fortunate group who can wear them to the exclusion of spectacles, if the lenses are well-fitted and the wearer cooperates completely with his qualified eye doctor."

The total cost varies between $150 and $300, the physicians said. Because of the lengthy training period, fitting and examination, and the precision of manufacture necessary, "it is doubtful that this price can be lowered, at least at present."

"These new type of lenses are still too far from perfection to permit their being sold to the general public by any high-pressure advertising or salesmanship," they said. Obtaining them only through qualified eye physicians will protect the public and also "permit this type of lens development to continue without the unfavorable criticism that will come if too many people buy them only to find that their eyes won't tolerate them."

new

in acne

classic medication
formulated for assured
freshness and stability

PRONAC*

(Brand of White Lotion, Modified)

stabilized† powder for
patient-prepared
polysulfide lotion

Physicians are agreed that to be effective in acne, polysulfide lotion (lotio alba, N.F.) must be freshly prepared, but this is rarely practical because of instability of the classic ingredients. Now, available in the form of a completely stable powder for mixing by the patient just prior to use, PRONAC adds the advantages of guaranteed freshness to the "time-tested" values of white lotion for more effective treatment of acne.

PRONAC is available in units of 12 sealed packets. Each packet is sufficient to prepare ½ oz. of fresh lotion when mixed with ½ oz. of water.

- always fresh
- unvarying potency
- assured stability
- minimal odor
- simply prepared

FOUGERA

E. FOUGERA & COMPANY, INC • 75 Varick Street, New York 13, N. Y.

T. M. †PATENT APPLIED FOR

World War II-Contracted Leprosy Reported

A California physician recently described what appears to be the first reported case of leprosy acquired during World War II military duty.

Dr. Norman E. Levan, Bakersfield, wrote in a recent issue of the *Journal of the American Medical Association* that some cases had been expected in servicemen stationed in regions such as the Philippines, where leprosy is prevalent. Some instances of the disease "may be anticipated during the next 30 years or more in veterans of both World War II and the Korean campaign who served" in such regions, he said.

Dr. Levan's patient was stationed on New Guinea, Leyte, and Luzon during the war, and while on Luzon was quartered in a native house. There was nothing in his record to indicate his condition could have been contracted outside of military service, Dr. Levan said. The patient is being treated, and he complies with regulations for temporary "modified isolation."

BOOKS RECEIVED

ACUTE POLIOMYELITIS—Diagnosis and Treatment of the Acute Phase of Poliomyelitis and its Complications. Edited by Albert G. Bower, M.D., The Williams and Wilkins Company, 1954. 257 pages, $6.50.

ANATOMY OF THE HUMAN BODY—Henry Gray, F.R.S. —26th edition. Edited by Charles Mayo Goss, M.D., Managing Editor of the Anatomical Record; Professor of Anatomy, Louisiana State University School of Medicine. Lea & Febiger, Philadelphia, 1954. 1480 pages, 1202 illustrations, mostly in color, $16.00.

ANATOMY OF THE MIGRATORY LOCUST, THE. F. O. Albrecht, University of London, The Athlone Press, 1953, distributed in U. S. A. by John de Graff, Inc., 64 West 23rd Street, New York 10, 1954. 118 pages, $6.00.

CANCER: RACE AND GEOGRAPHY—Some Etiological, Environmental, Ethnological, Epidemiological, and Statistical Aspects in Caucasoids, Mongoloids, Negroids, and Mexicans. Paul E. Steiner, Ph.D., M.D., Professor of Pathology, The University of Chicago, the Williams and Wilkins Co., Baltimore, 1954. 363 pages, $5.00.

CEREBROVASCULAR DISEASE. James Peter Murphy, M.D., Assistant Clinical Professor of Neurological Surgery, George Washington University School of Medicine. The Year Book Publishers, Inc., 200 East Illinois Street, Chicago, 1954. 408 pages, $12.00.

CLINICAL CHEMISTRY IN PRACTICAL MEDICINE—Fourth Ed. C. P. Stewart, D.Sc.,(Dunelm), Ph.D.(Edin.), Reader in Clinical Chemistry; and D. M. Dunlop, B.A. (Oxon.), M.D., F.R.C.P.,(Edin.), F.R.C.P.(Lond.), Christison Professor of Therapeutics and Clinical Medicine, both from the University of Edinburgh. E. & S. Livingstone, Ltd., London, distributed by Williams and Wilkins Co., Baltimore, 1954. 320 pages, $5.00.

CLINICAL ROENTGENOLOGY—Volume II—The Head, Neck and Spinal Column. Alfred A. deLorimier, M.D., Radiologist, St. Francis Memorial Hospital; formerly, Commandant, Army School of Roentgenology; Henry C. Moehring, M.D., Radiologist, Duluth Clinic, Duluth, Minnesota, formerly, Director, School of Roentgenology, Army School of Roentgenology; and John R. Hannan, M.D., Radiologist, Cleveland, Ohio, formerly, Director of Medical Training, the Army School of Roentgenology, Charles C. Thomas, publisher, Springfield, 1954. 464 pages, $18.50.

COLLECTED PAPERS OF OTTO FENICHEL, THE—Second Series. Collected and edited by Dr. Hanna Fenichel and Dr. David Rapaport. W. W. Norton, New York, 1954. 374 pages, $6.50.

DIGITAL CIRCULATION, THE. Milton Mendlowitz, M.D., F.A.C.P., Associate Attending Physician, Mount Sinai Hospital; Research Fellow, Columbia University Division of Goldwater Memorial Hospital, New York City. Grune & Stratton, New York, 1954. 182 pages, $6.75.

DISEASES OF THE SKIN—8th edition, thoroughly revised. Oliver S. Ormsby, M.D., late Rush Professor of Dermatology, University of Illinois; and Hamilton Montgomery, M.D., M.S., Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester, Minn. Lea & Febiger, Philadelphia, 1954. 1503 pages, 666 figures containing 750 illustrations and 18 colored illustrations on 11 plates, $22.00.

ENCYCLOPEDIA OF CHILD CARE AND GUIDANCE, THE. Sidonie Matsner Gruenberg, editor. Doubleday & Company, Inc., Garden City, New York, 1954. 1016 pages, $7.50.

EXISTENCE AND THERAPY—An Introduction to Phenomenological Psychology and Existential Analysis. Ulrich Sonnemann, Ph.D., formerly Associate Professor, New School of Social Research, and Clinical Psychologist in Federal Service. Grune & Stratton, New York, 1954. 372 pages, $5.00.

HEART—A Physiologic and Clinical Study of Cardiovascular Diseases—2nd edition. Aldo A. Luisada, M.D., Associate Professor and Director, Division of Cardiology, Chicago Medical School, The Williams and Wilkins Co., Baltimore, 1954. 680 pages, 312 figures, $15.00.

HUMAN BIOCHEMISTRY—4th Edition. Israel S. Kleiner, Ph.D., Professor of Biochemistry and Director of the Department of Biochemistry, New York Medical College. The C. V. Mosby Company, St. Louis, 1954. 746 pages, 93 illustrations and five color plates, $7.50.

LABORATORY AIDS IN ENDOCRINE DIAGNOSIS. Roberto F. Escamilla, M.D., Associate Clinical Professor of Medicine, University of California School of Medicine, Charles C. Thomas, publisher, Springfield, Ill., 1954. 131 pages, $4.75.

LEGAL MEDICINE. Edited by R. B. H. Gradwohl, M.D., Sc.D., F.A.P.H.A., Commander, M.C., U.S.N.R.(Ret.), Director of the Police Laboratory, Metropolitan Police Department, St. Louis; first president, American Academy of Forensic Sciences. The C. V. Mosby Co., St. Louis, 1954. 1093 pages, 222 illustrations, $20.00.

MEDICINE FOR NURSES—6th edition. W. Gordon Sears, M.D.(Lond.), M.R.C.P.(Lond.), Physician Superintendent, Mile End Hospital, London, Examiner to the General Nursing Council for England and Wales, Edward Arnold Publishers Ltd., London, distributed by Williams and Wilkins Company, Baltimore, 1954. 520 pages, $4.00.

OF PUBLISHING SCIENTIFIC PAPERS. George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine. Grune & Stratton, New York, 1954. 40 pages, $2.75.

PRACTICE OF ALLERGY. Warren T. Vaughan, M.D., Richmond, Va. Third edition revised by J. Harvey Black, M.D., Dallas. C. V. Mosby Co., St. Louis, 1954. 1164 pages, $21.00.

PRIMER OF ALLERGY—A Guidebook for Those Who Must Find Their Way Through the Mazes of This Strange and Tantalizing State—4th edition. Warren T. Vaughan, M.S., M.D., Richmond, Va. Fourth edition revised by J. Harvey Black, M.D., Dallas. C. V. Mosby Co., 1954. 191 pages, $4.25.

PROCEEDINGS OF THE FOURTH INTERNATIONAL CONGRESS OF THE INTERNATIONAL SOCIETY OF HEMATOLOGY—1952. Associate editors: F. Jimenez de Asua, Buenos Aires; William Dameshek, Boston; and Sol Haberman, Dallas. Grune & Stratton, Inc., New York, 1954. 473 pages, $10.00.

PROGRESS IN NEUROLOGY AND PSYCHIATRY—An Annual Review—Vol. IX. Edited by E. A. Spiegel, M.D., Professor and Head of the Department of Experimental Neurology, Temple University School of Medicine, Grune & Stratton, New York, 1954. 632 pages, $10.00.

TEXTBOOK OF BACTERIOLOGY—3rd edition. Joseph M. Dougherty, A.M., M.A., Ph.D., formerly Dean of the School of Science and Professor of Bacteriology, Villanova University; and Anthony J. Lamberti, B.S., M.S., Instructor in Bacteriology, Temple University School of Medicine. The C. V. Mosby Company, St. Louis, 1954. 598 pages, 190 illustrations, $8.25.

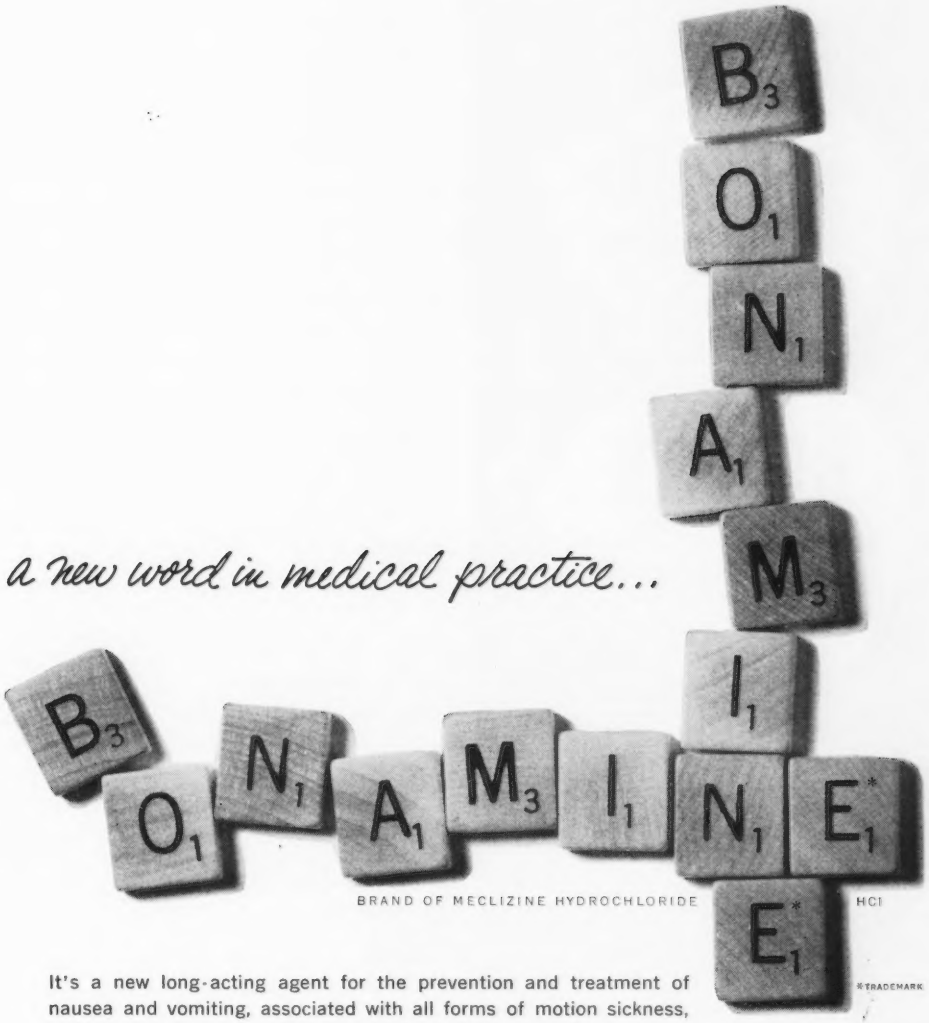
TEXTBOOK OF MEDICINE—By Various Authors—11th Edition. Edited by Sir John Conybeare, K.B.E., M.C., D.M. (Oxon.), F.R.C.P., Physician to Guy's Hospital, London; and W. N. Mann, M.D. (Lond.), F.R.C.P., Physician to Guy's Hospital, London. E. & S. Livingstone Ltd., Edinburgh and London, 1954; distributed through Williams and Wilkins Co., Baltimore. 904 pages, $8.00.

TEXTBOOK OF OPERATIVE GYNECOLOGY. Wilfred Shaw, M.A. (Camb.), M.D., F.R.C.S. (Eng.), F.R.C.O.G., Late Surgeon in Charge, Gynæcological and Obstetrical Department, St. Bartholomew's Hospital; Examiner, University of London, and Royal College of Obstetricians and Gynæcologists. E. & S. Livingstone Ltd., Edinburgh and London, 1954; distributed by Williams and Wilkins Company, Baltimore, Maryland. 444 pages, $19.00.

TEXTBOOK OF PEDIATRICS—6th edition Edited by Waldo E. Nelson, M.D., Professor of Pediatrics, Temple University School of Medicine. With the collaboration of seventy contributors. W. B. Saunders Co., Philadelphia, 1954. 1581 pages, $15.00.

VOICE OF NEUROSIS, THE. Paul J. Moses, M.D., Assistant Clinical Professor in Charge of Speech and Voice Section of the Division of Otolaryngology, Stanford University School of Medicine, San Francisco, Grune & Stratton, New York, 1954. 131 pages, $4.00.

a new word in medical practice...



BRAND OF MECLIZINE HYDROCHLORIDE HCl

*TRADEMARK

It's a new long-acting agent for the prevention and treatment of nausea and vomiting, associated with all forms of motion sickness, radiation therapy, vestibular and labyrinthine disturbances, and Ménière's syndrome.

Side effects, so often associated with the use of earlier remedies, are minimal with Bonamine. Its duration of action is so prolonged that often a single daily dose is sufficient. Bonamine is supplied in scored, tasteless 25 mg. tablets, boxes of eight individually foil-wrapped and bottles of 100.

Pfizer

PFIZER LABORATORIES, Brooklyn 6, N. Y.
Division, Chas. Pfizer & Co., Inc.

Parents Should Be Alert To Cancer in Children

Children do not have cancer as often as adults, but early diagnosis is even more important for them than for their elders.

The disease spreads and progresses more rapidly in children, and the symptoms are often confused, resembling many common childhood illnesses. Because of this, the disease may go unrecognized until it is too late for cure.

Dr. Frank L. Rector, Evanston, Ill., said in a recent issue of *Today's Health* magazine, published by the American Medical Association, that parents should be alert to these dangers. He said prompt diagnosis and treatment can save the child's life.

Cancer, when it does occur in children, follows definite patterns. From birth to five years the predominating types are cancer of the kidney, eye and central nervous system, and leukemia; from five to 10 years, leukemia and central nervous system tumors and fewer eye cancers; and from 10 to 15 years, bone tumors. From 15 to 20 years the adult types become more common, he said.

A mother may notice the signs of kidney cancer, or Wilms's tumor, when changing a diaper. The major symptom is abnormal fullness in the back on the side of the involved kidney. There is no pain and no other symptoms.

Neuroblastoma, the most common abdominal type among infants, is suggested by painless abdominal enlargement, pallor, loss of weight and some fever.

Central nervous system cancer has various symptoms depending on the part of the brain involved. In older children there may be unsteadiness of walk, disturbances of vision, headaches and upset stomach without relation to eating. There may be personality changes: "an obedient, likeable, studious and dependable child may rather suddenly develop opposite characteristics," Dr. Rector said.

Cloudiness or "cat's eye" may be a warning of an eye cancer, and cancer of the bone is a possibility when there is a painful and tender swelling in or near the joint of a long bone such as the shoulder, elbow, wrist, hip, knee or ankle.

Most moles and warts are as harmless in children as in adults. However, if a mole or wart changes to a dark color, hurts, or bleeds when irritated, it should be examined microscopically.

As with all cancer, little can be done to prevent it in children but it can be cured if discovered early, Dr. Rector said. Parents should learn that "a knowledge of the major signs and symptoms encountered in these ages is essential to recognition; and that prompt diagnosis with proper treatment as soon as cancer is found will go far toward saving the patient's life."

in the treatment of Hypertension

Effectively

mannitol hexanitrate exerts vasodilator action and persistent relaxation of smooth muscle

New and Nonofficial Remedies: A.M.A. Council on Pharmacy and Chemistry, J. B. Lippincott, p. 243, 1953.

Safely

fewer side effects with mannitol hexanitrate . . . greater percentage fall in blood pressure

N. Y. Physician *31*:20 (Jan.) 1949.

Economically

combined medication that provides simultaneously:

vasodilatation (mannitol hexanitrate)
diuresis (theophylline)
sedation (phenobarbital)
capillary protection (ascorbic acid + rutin)

Semhyten®

BRINGS THE PRESSURE DOWN SLOWLY  **SAFELY**

Complete Medication for the Hypertensive

Each Semhyten Capsule contains:	Phenobarbital..¼ gr. (15 mg.)
Mannitol Hexanitrate....½ gr. (30 mg.)	Rutin ..... 10 mg.
Theophylline .....1½ gr. (0.1 Gm.)	Ascorbic Acid ..... 15 mg.

Supplied: In bottles of 100, 500 and 1000 pink-top capsules.

The S. E. MASSENGILL Company • Bristol, Tennessee

"Home-Style" Diaper Wash Good for Hospital, Too

Tests at a Michigan University hospital nursery show that "mother knows best" about diaper care, too.

Three physicians found that the simple diaper washing routine many mothers use is a quick, safe way to sterilize diapers and help prevent the spread of bacteria that often plagues nurseries for sick infants.

They said although the problem of controlling "epidemic diarrhea" in such nurseries is not yet solved, an obvious important factor is sterile diapers. The usual techniques of hospital laundry are not satisfactory for diapers, and rinsing the used diapers before sending them to a central laundry only increases chances of infection.

So they tried ordinary home washers and dryers in a room near the nursery, first placing used diapers in a can of antiseptic solution for a few hours. Laboratory tests showed only traces of growths in a few washed batches, and no bacteria at all after thorough drying.

The report in a recent issue of the *Journal of the American Medical Association* was made by Drs. Ernest H. Watson, James L. Wilson, and Arthur Tuuri, of the department of pediatrics of the University of Michigan Medical School, Ann Arbor.

Define Officers' Membership in American Medical Association

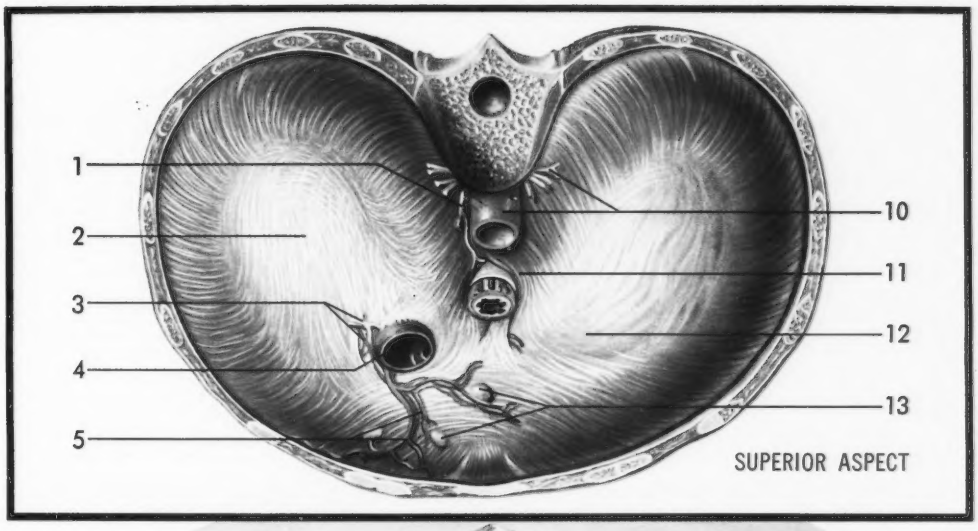
At the American Medical Association San Francisco meeting a resolution was introduced, requesting that reserve officers of the United States Public Health Service who are on active duty be given service membership in the A.M.A. The resolution was referred to the board of trustees, which has since ruled that:

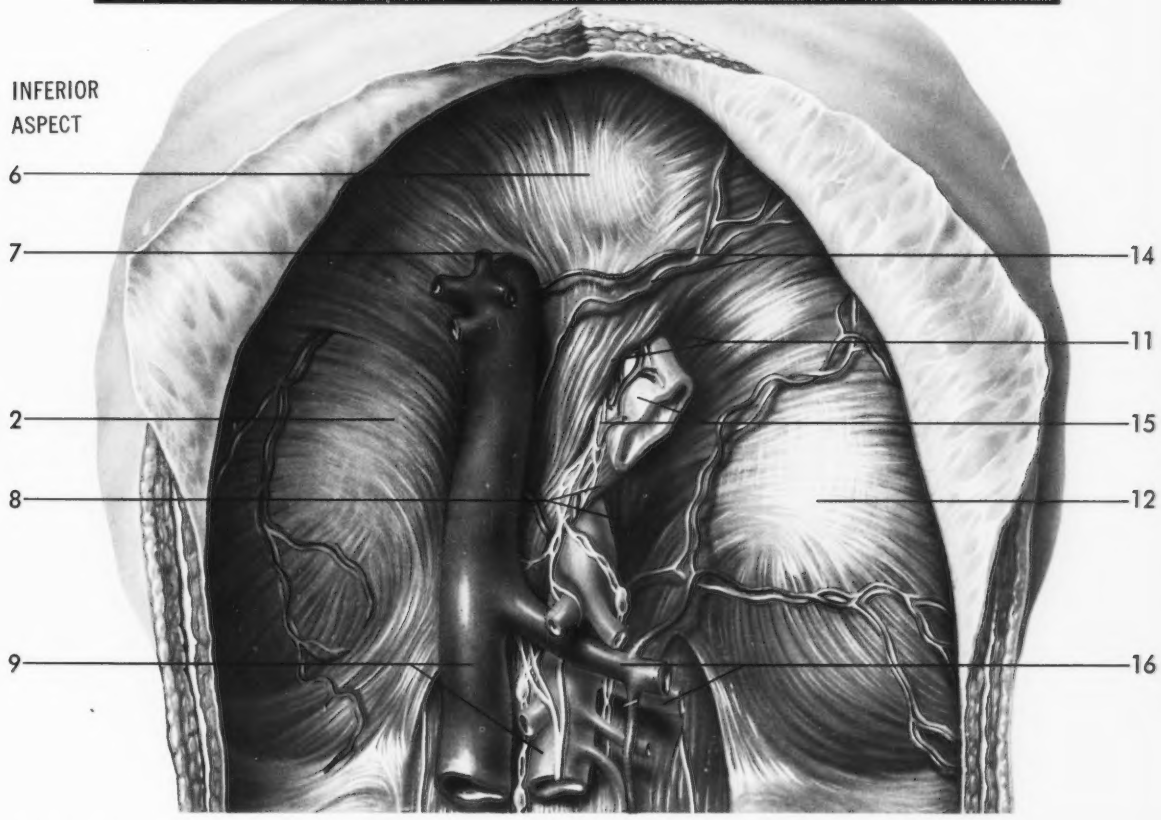
"Reserve medical officers of the United States Public Health Service on active duty are to be given the same consideration as that extended to reserve medical officers on active duty with the military forces. In other words, those officers will be exempted from payment of dues for the period beginning January 1 or July 1 following the date of the member's entrance into the service."

All such officers who hold a type of membership in the constituent medical association that permits them to vote and hold office will be eligible to hold active membership in the A.M.A. and be excused from the payment of dues. It will be necessary, therefore, for their names to be forwarded through their constituent medical society to us with the request for exemption from the payment of A.M.A. dues. During the period for which they are exempted, they are not entitled to receive the *Journal of the American Medical Association* as a benefit of

(Continued on Page 83)

The Diaphragm





1 Azygos vein
2 Right leaflet
3 Phrenic nerve; pericardiacophrenic artery
4 Vena cava
5 Superior phrenic artery and vein
6 Middle leaflet
7 Vena caval foramen
8 Aortic hiatus
9 Inferior vena cava; abdominal aorta
10 Aorta; sympathetic trunk
11 Esophageal hiatus
12 Left leaflet
13 Diaphragmatic lymph nodes
14 Inferior phrenic artery and vein
15 Esophagus; vagus nerve
16 Left renal artery and vein

This is one of a series of paintings by Paul Peck, illustrating the anatomy of various organs and tissues of the body which are frequently attacked by infection, where Aureomycin may prove useful.

Define Officers' Membership in American Medical Association

(Continued from Page 82)

membership, but may subscribe to it, or to other A.M.A. publications. Such officers will be given active membership in the American Medical Association and not service membership.

Service members are regular, full-time medical officers in the Army, Navy, Air Force, U. S. Public Health Service, Veterans Administration, and Indian Service, and are not required to hold membership in a component and constituent association.

—The A.M.A. Secretary's Letter

Boric Acid in Talcs Can't Hurt Babies

Two New York physicians recently stated that dusting powders containing small amounts of boric acid can be used safely for babies. Infant deaths from boric acid solutions have been caused only by "ignorant" or accidental misuse of strong preparations.

Standard baby powders "carefully tested and manufactured by ethical firms" usually contain no more than five per cent boric acid. This amount cannot hurt a baby, even if dusted on irritated skin, the physicians said in a recent issue of the *American Journal of Diseases of Children*, published by the

(Continued on Page 86)

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Boric Acid in Talcs Can't Hurt Babies

(Continued from Page 83)

American Medical Association. In fact, boric acid counteracts the possibly irritating qualities of talc.

They said tests on 66 infants at the New York Foundling Hospital showed boric acid in five per cent concentrations is "practically unabsorbed through the intact skin of infants" even where there is a rash.

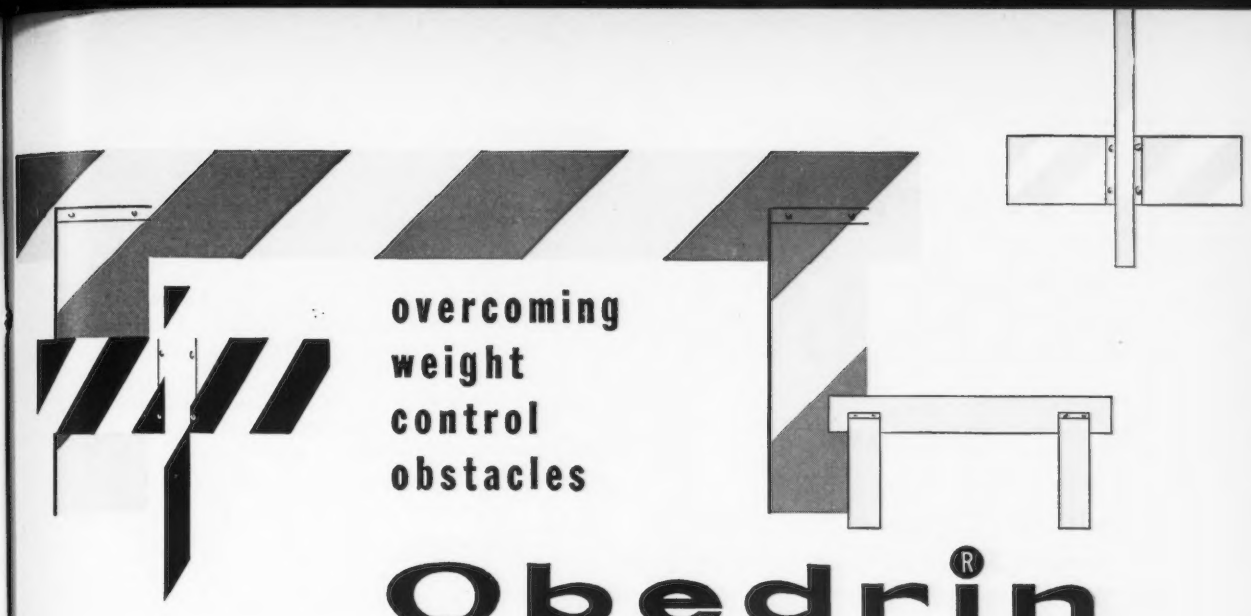
The "considerable attention" given in recent years to the "dangers and hazards" of misusing boric acid was "rightly inspired by the regrettable reports of accidental deaths, especially in small infants," Drs. Alfred J. Vignec and Rose Ellis said.

However, they said it is unfortunate that it has not been made clear that all deaths have been due to "accidental, ignorant and at times negligent handling" of solutions, ointments and powders containing high concentrations of boric acid. The greatest number of fatal cases have been from the accidental swallowing of boric acid by newborn infants.

To abandon use of baby powders because of these reports is "absurd," they said. If we eliminated everything containing boron or its compounds, we would have to stop eating lamb, fish, crabs, lobsters, chicken, and eggs.

The physicians said the practical lesson to be learned is that powdered boric acid should not be dispensed "over the counter" to the public, and boric acid solutions should not be permitted where "any possibility of human error" in their administration may exist.

"This does not mean that one should abandon the use of talcs which contain small amounts of boric acid in nonabsorbable form, since there is no evidence whatsoever . . . that such products are dangerous," they said.



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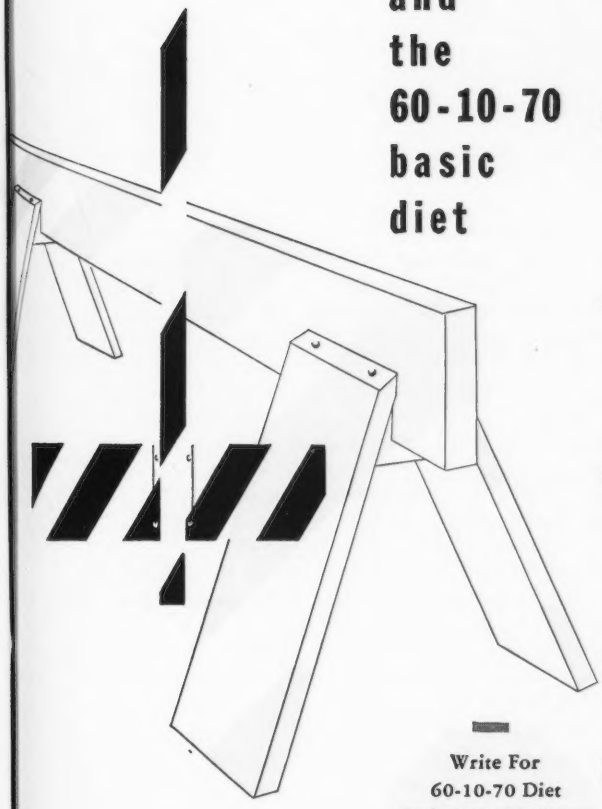

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Pentobarbital.....	20 mg.
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Niacin.....	5 mg.

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Even Babies May Have Migraine Headaches

Babies even as young as two weeks old can suffer migraine headaches.

Symptoms of infant migraine are much like those for adults, but a positive diagnosis can't be made until the child is old enough to describe his feelings, according to Dr. Jerome Glaser, Rochester, N. Y., in a recent issue of the *American Journal of Diseases of Children*, published by the American Medical Association.

Migraine headaches usually occur periodically on one side of the head and are accompanied by visual disturbances and a variety of other symptoms. In children, they may be due to an allergy, particularly to such foods as chocolate, eggs, wheat and milk, he said.

Although two weeks is the earliest age at which migraine has been reported, Dr. Glaser said the youngest child he had ever seen with migraine was a 3-year-old girl.

"She would act as though in pain, would pat one side of her head, and would constantly repeat the single word 'hurt.' These attacks were followed by abdominal pain, nausea, and vomiting," he said.

Babies are very likely to have migraine headaches while young without being diagnosed until much later. Most migraines are found when the child is taken to the physician for some other difficulty, such as bronchial asthma or allergic reactions.

"The question . . . naturally arises as to how one can diagnose headache in infancy and early childhood," Dr. Glaser said. He explained that headache may be suggested when the child wrinkles his forehead, rubs his head, is restless, and cries. A diagnosis can only be established when he is older and complains of headache while showing the same symptoms noted in infancy.

Symptoms are very similar to those of migraine in adults, except that children usually show abdominal discomfort, loss of appetite and lack of energy before an attack while adults usually become irritable and abnormally hungry. A child may be unusually restless the night before a headache and show a gradual temperature rise up to 104 degrees in the morning. Other symptoms are distended abdomen, dizziness, bad breath, and a very definite change of behavior to sadness, excessive gaiety or definite irritability. Some children show cardiac signs — shortness of breath, pallor, sweating, and feelings of anxiety.

One of the commonest causes is eye trouble. Dr. Glaser said no child with recurrent headaches should be given up as hopeless from the standpoint of permanent relief until he has been completely checked by an eye specialist.

However, he said many children suffer headaches because of an allergy to certain foods. Most conspicuous are chocolate, egg, wheat and milk. He said in some cases improvement was "remarkable" when the allergy-producing foods were kept out of the child's diet.

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So Easy, too... **merely two 2 mg. tablets at bedtime!**

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Meat...

and Adequate Nutrition in Children

Though it is universally accepted that protein nutrition deserves special emphasis in childhood, the possibility of protein deficiency in children rarely receives adequate attention.[1] As shown by creatinine excretion, children frequently are deficient in muscle mass. Through improved protein nutrition muscle mass in these children often can be increased by as much as 25 per cent without increasing body weight, thus demonstrating that fat is being replaced with muscle tissue.[2]

Vigilant heed is necessary to assure that children get enough of foods supplying an abundance of biologically adequate protein and of vitamins and minerals. Rapid growth and the great activity of children make the demand for these nutrients and for calories even more urgent than in adults.

Surveys show that faulty eating habits largely are responsible for the high incidence of nutritional deficiency and anemia in school children.[3] Among commonplace practices carrying such nutritional hazards are small, poorly chosen breakfasts or omission of the morning meal; the selection of foods left to discretion of the child; overindulgence in foods and drinks providing calories but little of protein, vitamins, and minerals; failure to eat meat or equivalent foods in adequate quantity; and the eating of insufficient amounts of vegetables and fruits.[4]

Meats should be a regular item in the diet of children,[5] not only for its notable contribution of top-quality protein, but also because meat furnishes important amounts of B vitamins—thiamine, riboflavin, and niacin—and of minerals, including iron, potassium, and phosphorus.

---

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The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

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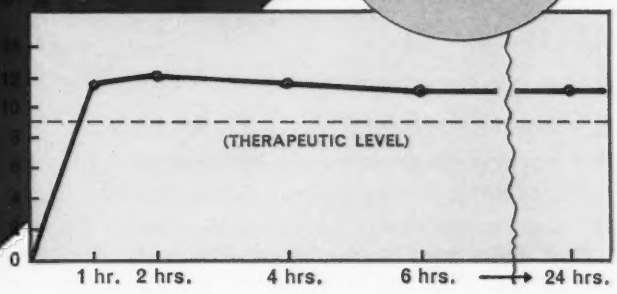

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Short or Tall, You Have Distinct Advantage

Every sized man, short, medium or tall—has a distinct advantage in social situations if he knows how to use it.

Men who worry about towering over others or looking up to them shouldn't let it become a stumbling block, Dr. John E. Eichenlaub, Ackley, Iowa, stated in a recent issue of *Today's Health* magazine, published by the American Medical Association.

"The big man bemoans the fact that his clothes go out of press and never look very snappy," he said. "The small man wishes he didn't have to make up for his unimpressive natural front by wearing flashy clothes. The medium-sized man wishes he would stand out in a crowd."

"You can keep the problem of size from bothering you if you remember that men of every size have special, valuable ways to handle people," he said.

The big man can carry his point better without extra pressure. He easily can be impressive.

"When we look at a big man, we look up to him—if he simply meets our idea of quality in his dress and manner, we find him impressive," Dr. Eichenlaub said. "If he exploits this quality, a big man doesn't have to make people sit up and take notice."

The medium-sized man's strong points are that he can get a lot of things by familiarity and brotherly ease.

"After you've settled into a chair beside a medium-sized man, you feel more at ease and more comfortable with him than with someone at either end of the size scale," he said.

A small man can "get away with ways of attracting attention" which others cannot.

"He can argue with keenness (and even sharpness or cynicism) without giving offense," Dr. Eichenlaub said. "He can easily win sympathy and support by simply remaining modest."

Letting size become a problem is what makes "so many small men super-tough, so many big ones loud dressers and louder talkers, so many medium-sized ones braggarts and life-of-the-party types," he said. The trouble is that "friends won by a false front have to be won again when they get to know the real you." He advises remembering that "methods which spring from deep in your own personality need not fit your size."

"There is such a thing as stature apart from size, and actually it is the important kind. There's no use stunting your personality by denying it simply because of your physical size. Rather, let your size help you to genuine personality and respect."

Conference

on

PHYSICIANS and SCHOOLS

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Our first Conference on Physicians and Schools. Representatives of the State Department of Public Health, the State Department of Education, and the California Medical Association will officiate at the Conference. Sixty outstanding men and women in these professions have been invited to serve as consultants to the discussion groups.

PURPOSE OF THE CONFERENCE: To develop means by which the public health, educational, and medical professions can more closely coordinate efforts toward improving the health protection of California's school children.

RESERVATIONS at the Fresno Hacienda, or nearby motels/hotels, will be handled through the California Medical Association's Housing Bureau, 450 Sutter Street, San Francisco. Rooms at the Hacienda are available in limited numbers. Please make a first, second, and third choice. In order to assure the type of accommodation which you desire, please place your reservation early.

TRAVEL: Fresno is located approximately equidistant from Los Angeles and San Francisco. It is easily accessible by plane, train or by automobile.

DISCUSSION GROUPS:

1. Communicable Disease
2. Health Guidance and Physical Education
3. Environmental Aspects of School Health
4. Emotional Problems of Growing Children
5. Children with Special Health Problems
6. Family Physician and School Health
7. School Physician and School Health
8. Emergency Care

CALIFORNIA MEDICAL ASSOCIATION EUREKA 1856

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450 SUTTER STREET SAN FRANCISCO

The role of the male in TRICHOMONAL RE-INFECTION

"A Frank Discussion"

The concept that trichomonal infestation is not peculiar to the female genitalia alone is now established authoritatively. Numerous investigations[1-6] have confirmed the presence of the infesting organisms in the male prepuce, urethra, prostate, or bladder.

The symptomatology observed in the male varies widely and apparently causes no serious residual lesions.[1] Frequently the chief complaint is a nonpurulent discharge with an almost complete lack of accompanying reaction.

According to Lancely in his investigation,[1] the infection can even exist in a nonsymptomatic state. A recent study of 735 male patients, reported in *The Journal of the American Medical Association*, verified conclusively that the "... preputial sac, urethra, or prostate may all be sites of infection ... and that the spread of disease by coitus is not uncommon."

Other studies[2-6] amply support these findings. Crossen,[2] in his notations on persistent and therapy-resistant cases of trichomonal vaginitis in the female, reports many avenues of re-infection, listing among others — douche nozzles, fingers, and the sexual partner. He emphasizes the importance of checking the husband as a possible focus of re-infection.

Bernstine and Rakoff[3] point up the necessity for checking the husband "... particularly as a source of infection in the female ..." Reich and Nechtow[6] similarly advocate such a procedure, stating, "The male, too, may be a source of re-infection. The prostate should be checked as a possible source of trichomonads." Wharton[5] notes "... the infection returns after coitus ..." and again, "Occasionally the husband is the reinfecting focus."

Increasingly, data and studies point up the need for prophylactic measures in coitus, as an effective adjunct to routine trichomonal therapy of the female. The importance and rationale for the use of a condom should be explained carefully. Rakoff et al.[3] are quite definitive in an exposition of treatment and prophylaxis for trichomonal infection and re-infection.

"If the male harbors trichomonads, condoms should be used during sexual intercourse until it is certain the infestation has been cleared up entirely. When the condition exists in the female alone, coitus is best avoided until the vaginitis and active stage of treatment are over: thereafter the husband should use condoms for a period of at least three months after the last treatment ..."[3]

Occasionally, patients will manifest a reluctance to use the condom because of inconvenience or dulling of sensation. These objections are readily overcome following the recommendation and initial trial of pre-moistened, convenient FOUREX® skins. As these are prepared from the cecum of sheep, they do not exert any retarding effect on sensory nerve endings. In those cases where cost is a paramount factor, the use of RAMSES,® a transparent, very thin rubber condom, or SHEIK,® a popular-priced brand, will prove eminently satisfactory.

Physicians may now obtain a complimentary package, which will enable them to confirm the prophylactic value of FOUREX pre-moistened skins and RAMSES and SHEIK rubber condoms as therapeutic adjuncts in trichomonal re-infection. In order to limit the distribution to physicians, requests should be made on your prescription blank and mailed to Dept. C2, Julius Schmid, Inc., 423 W. 55th St., New York 19, N. Y.

references:

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"easy, safe, and free of side-reactions"[1]

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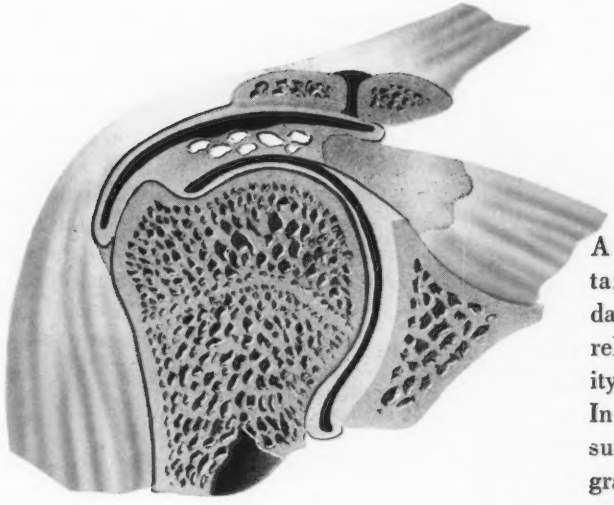

A 1-cc. injection of sustained-action MY-B-DEN, daily or every other day, relieved pain and disability in 44 out of 53 patients. In nine patients awaiting surgery, relief was "so gratifying" that operation was cancelled.[1] Equally successful results have been reported by other investigators.[2,3]

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"pioneers in adenylic acid therapy" Bischoff

ERNST BISCHOFF COMPANY, INC • IVORYTON, CONNECTICUT

American Medical Association Head Proposes Plans To Care for Uninsurables

The responsibility for financing the cost of illness for low-income and uninsurable persons is a local and state concern, Dr. Walter B. Martin, Norfolk, Va., president of the American Medical Association, stated recently.

In a recent issue of the *Journal of the American Medical Association*, Dr. Martin said health care costs for the noninsurable must be met by local and state aid and philanthropic funds. To lower the amount of aid needed, Dr. Martin proposed two methods: further expansion of sound voluntary insurance plans, and more chronically ill and convalescent hospitals to provide for these persons at lower per diem cost.

He said the problem must be met at this level since there can be "no acceptable or realistic standard for federal aid." Federal government participation would be "difficult to carry out without a degree of federal supervision and control that would be highly objectionable. . . . The medical needs of a person will vary with the duration and severity of his illness or disability and his immediate necessity could not be measured by any national yardstick."

Dr. Martin said pressure would be exerted to lengthen this yardstick until each year more persons would claim government assistance.

Opposition to federal aid "in no way solves the problem of providing for the health care of the uninsurable nor lessens the responsibility for working out a realistic and effective means of financing the necessary care for these persons," he said.

This uninsurable group now includes many of the 13,500,000 persons over 65, the subsistence-income groups, many chronically ill, and the more than 5,000,000 recipients of direct governmental assistance. The number of persons in these categories could be reduced to some extent from the present total of 30 to 35 million by insurance coverage for those able to buy it but not able to pay for an illness when it occurs, he said. The responsibility for those who remain uninsurable rests at the local level.

"Only at the local level can the medical needs of individuals be determined," Dr. Martin said. "Only at the local level can their economic status be assessed in relation to their medical requirements at a particular time."

Dr. Martin called for a "joining of forces" between state medical societies and hospitals in promoting sound voluntary insurance plans and providing "the means of financing the care of the uninsurable . . . at the state and local level."

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1. wide antibacterial spectrum, plus high solubility, plus low incidence of sensitization.

2. acid pH (4.6) providing unfavorable medium for vaginal pathogens.

3. aesthetic appeal—pleasant white vanishing cream.

Dosage and Administration: from one-half to one applicatorful (2.5-5 cc) introduced into the vagina twice daily (in the morning and upon retiring).

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Caution: If patient develops sensitization, treatment should be discontinued.

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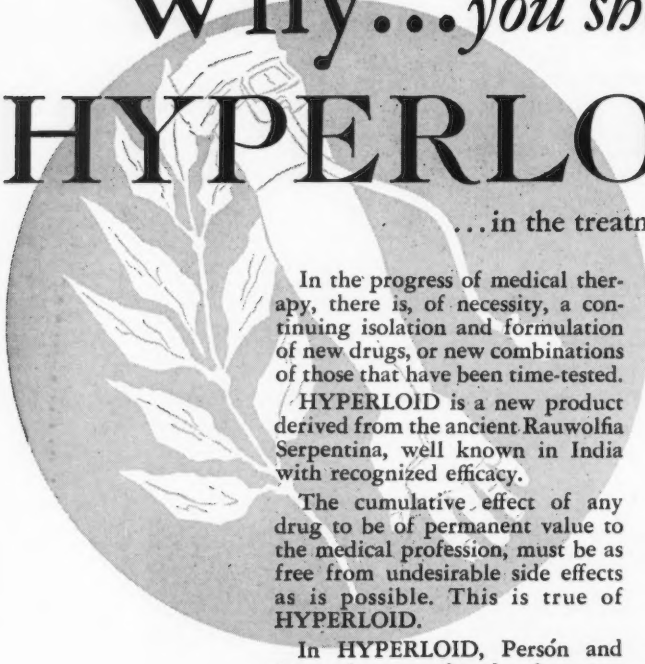
Why...*you should consider*

HYPERLOID* (Rauwolfia Serpentina)

...in the treatment of hypertension



In the progress of medical therapy, there is, of necessity, a continuing isolation and formulation of new drugs, or new combinations of those that have been time-tested.

HYPERLOID is a new product derived from the ancient Rauwolfia Serpentina, well known in India with recognized efficacy.

The cumulative effect of any drug to be of permanent value to the medical profession, must be as free from undesirable side effects as is possible. This is true of HYPERLOID.

In HYPERLOID, Persón and Covey have produced a hypotensive of controllable and constant potency for the treatment of hypertension. It effects a relaxing sedation, mild bradycardia, and a sense of well being.

While most effective in mild and labile hypertension, HYPERLOID is useful in virtually every case of essential hypertension. It is completely safe, lowering the blood pressure slowly and gradually. There are no serious toxic or side effects and no known contraindications.

It is compounded as a sugar-coated tablet derived from the whole root.

Why the whole root?

Hypotensive activity of Rauwolfia is not confined to one single alkaloid. Several of the alkaloids have a relaxing activity, some of which would be lost by the use of one alkaloid alone. Too, the non-alkaloid resin fraction, which is reported to have additional sedative effect, is present in HYPERLOID, but is not present in any of the alkaloid extracts. There are the same side effects in all three types of Rauwolfia products – extracts, single alkaloid, or whole root. Use of the whole root offers these additional advantages.

Constant, unvarying potency is achieved even in whole root formulation, through animal tests and assay of alkaloid content, allowing predictable results. Tolerance does not develop, thus controlled dosage is possible, achieving an even effective level.

It may also be used successfully in combination with lower dosage requirements of more potent hypotensive agents which in larger quantities are prone to produce toxic or undesirable side-effects.

Its potency is based on the milligrams of alkaloids as the hypotensive effect lies in the alkaloid content of rauwolfia. This in HYPERLOID is constant at 2 mg. per tablet. And of some importance is the fact that by the method of formulation, it is possible to produce HYPERLOID in a more inexpensive form than hitherto possible. This in itself is an especially desirable factor in any long continuing treatment in the control and management of hypertension.

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VITAMIN SUPPLEMENTS FOR INFANTS

Superior flavor Exceptionally pleasant "taste-tested" blend of flavors carefully protected during manufacture . . . no unpleasant aftertaste . . . readily accepted without coaxing.

Superior stability  Outstanding stability is achieved by Mead's specially developed solution. Poly-Vi-Sol and Tri-Vi-Sol do not require refrigeration . . . no expiration dates on labels . . . they may be safely autoclaved with the formula.

Superior convenience Light, free-flowing . . . no mixing necessary . . . calibrated droppers assure easy, accurate dosage. For infants, drop directly into the mouth. For children, measure into a spoon.

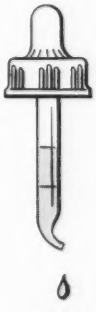
Superior hypoallergenicity  Poly-Vi-Sol® and Tri-Vi-Sol® supply crystalline vitamins in a completely hypoallergenic solution.

Poly-Vi-Sol

Six essential vitamins for drop dosage

Each 0.6 cc. supplies:

Vitamin A	5000 units
Vitamin D	1000 units
Ascorbic acid	50 mg.
Thiamine	1 mg.
Riboflavin	0.8 mg.
Niacinamide	6 mg.



Tri-Vi-Sol

Vitamins A, D and C for drop dosage

Each 0.6 cc. supplies:

Vitamin A	5000 units
Vitamin D	1000 units
Ascorbic acid	50 mg.

Available in 15 cc. and 50 cc. dropper bottles

MEAD JOHNSON & COMPANY • EVANSVILLE, INDIANA, U. S. A. MEAD

no, doctor, they're not **all** alike...

combined vaccines differ, too

Only Cutter **Dip-Pert-Tet Alhydrox®** gives you all these advantages:

Alhydrox adsorption. Alhydrox (aluminum hydroxide adsorbed) is a Cutter exclusive that prolongs the antigenic stimulus by releasing the antigens slowly in the tissues to build more durable immunity.

Maximum immunity against diphtheria, pertussis and tetanus with uniformly superior antitoxin levels.

Fewer focal and systemic reactions in infants because of improved purification and Alhydrox adsorption.

12 N.I.H. pertussis protective units per immunization course (1.5 cc.)

Standard Dosage—0.5 cc. per injection, only three injections.

Supplied in 1.5 cc. vials and 7.5 cc. vials. Also available: famous purified **Dip-Pert-Tet Plain**—a product of choice for immunizing older children and adults.

Try it, compare it! You'll see why there is only one

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